Kawasaki

BRUTE FORCE 750 4×4i EPS
BRUTE FORCE 750 4×4i
KVF750 4×4 EPS
KVF750 4×4

All Terrain Vehicle Assembly & Preparation Manual

Foreword

In order to ship Kawasaki vehicles as efficiently as possible, they are partially disassembled before crating. Since some of the most commonly removed parts have a direct bearing on a vehicle's reliability and safety, conscientious pre-sale assembly and preparation become extremely important. Good setup procedures can prevent needless warranty claims and give customers a greater sense of confidence in Kawasaki and their Kawasaki Dealers.

This Assembly and Preparation Manual explains step by step procedures of the following items for all Kawasaki BRUTE FORCE 750 4×4i EPS, BRUTE FORCE 750 4×4i, KVF750 4×4 EPS, KVF750 4×4.

1. Uncrating
2. Assembly
3. Preparation

The selling dealer assumes sole responsibility for any unauthorized modifications prior to sale. Refer to your Service Binder for any Service Bulletins specifying Factory Directed Modifications (Special Claims) which must be performed before the vehicle is ready for sale.

Whenever you see the following symbols heed their instructions! Always follow safe operating and maintenance practices.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to personal injury.

NOTE

○ *This note symbol indicates points of particular interest for more efficient and convenient operation.*

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Table of Contents

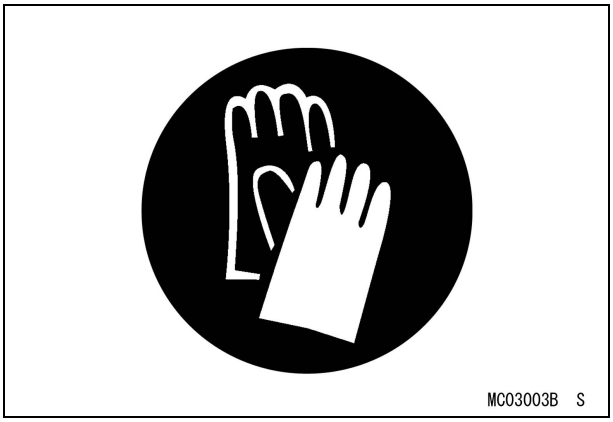
Uncrating 3
Opening Crate (US and Canadian Models only) 3
Opening Crate (Other than US and Canadian Models) 6
Parts Check 7
Assembly 10
Handlebar 10
Hangtag 11
French Labels 11
Owner's Manual 12
Preparation 13
Battery Service 13
Air Cleaner 16
Front Final Gear Case Oil 17
Rear Final Gear Case Oil 18
Front Brake 19
Rear Brake 20
Suspension 21
Tire Air Pressures 22
Fuel 22
Coolant 22
Engine Oil 23
Throttle Lever and Cable 24
Variable Differential Control Lever and Cable 25
Rear Brake Light Switch Adjustment 26
Headlight Beam 26
Front Wheel Alignment 26
Multifunction Meter 29
Fastener Check 32
Standard Torque Table 34
Test Ride 34
A&P Check List 34

Uncrating

Opening Crate (US and Canadian Models only)

⚠ WARNING

Crates have sharp edges and may have nails or screws that can cause cuts and injury. Always wear protective gloves, boots and eye protection when uncrating to prevent injury.



⚠ WARNING

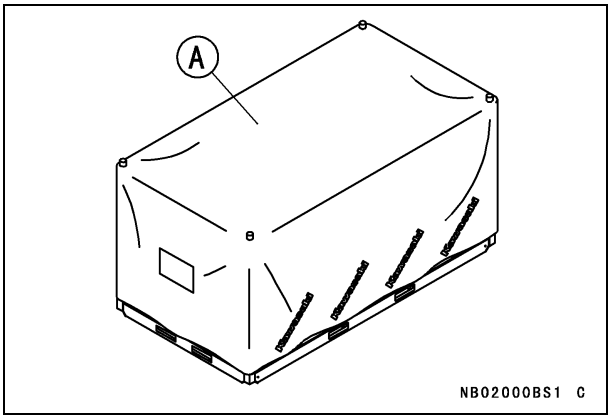
The steel crate panel plates and fasteners have sharp edges. Always wear protective gloves, boots and eye protection when uncrating to prevent injury.

- Clear a space about 6 m (20 ft) square to give yourself plenty of space to work.
- Place the crate upright on its base.
- Remove the outer cover and inspect the unit for concealed damage. If concealed damage is evident, document the damage as outlined in the Kawasaki Warranty Policies and Procedures Manual before proceeding to uncrate the unit.
- Remove the cardboard cover.

Returnable Steel Crate (RSC):

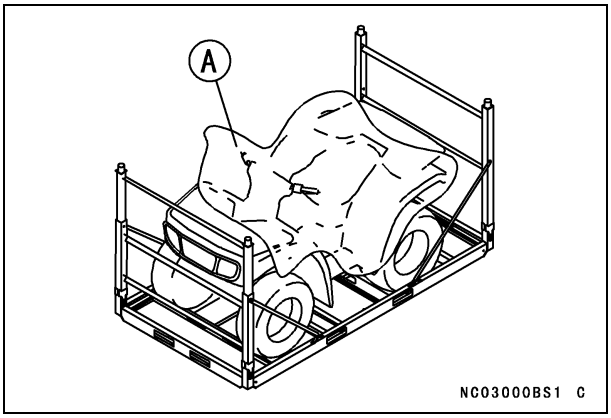
NOTICE

To avoid damaging the front plastic guard, fold down the front end of the steel crate before removing the tie-downs.



A. Outer Cover

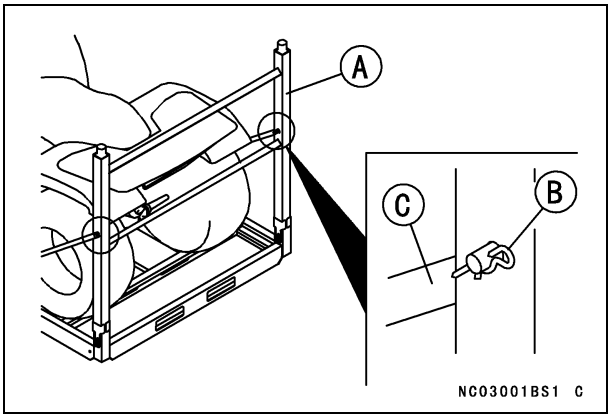
- Remove the inner cover.



A. Inner Cover

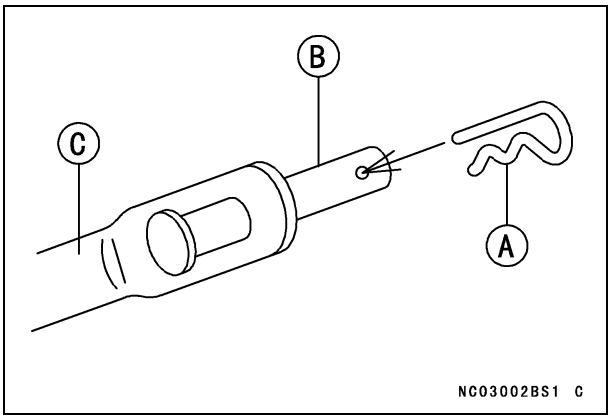
To work efficiently, start work at the rear of the crate.

- Remove the hairpin clips (2), then push out the clevis pins (2) to disconnect the rear diagonal braces (2) from the rear upright.



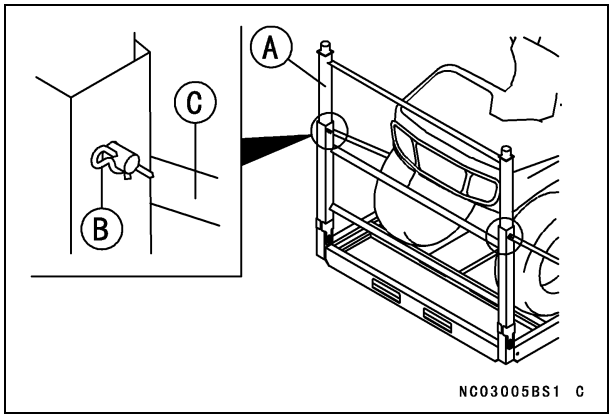
A. Rear Upright
B. Hairpin Clip
C. Diagonal Brace

- Allow the diagonal braces to pivot out and down to the ground. They remain attached to the pallet.
- Install the hairpin clips (2) back into the braces for return shipment to KMM.



A. Hairpin Clip
B. Clevis Pin
C. Diagonal Brace

- Remove the LH side rear diagonal brace, again allowing it to pivot down. At this time, the rear upright may be pivoted down, but it may not be necessary to do so. Only one upright must be pivoted down before rolling off the vehicle. In this example, the vehicle will be rolled out the front, which is shown later.
- Moving to the front, disconnect the front diagonal braces (2) from the front upright. Pull out the hairpin clips (2), push out the clevis pins (2), and allow each diagonal brace to pivot down to the ground. Install all pins and hairpin clips back into the braces for return shipment to KMM.

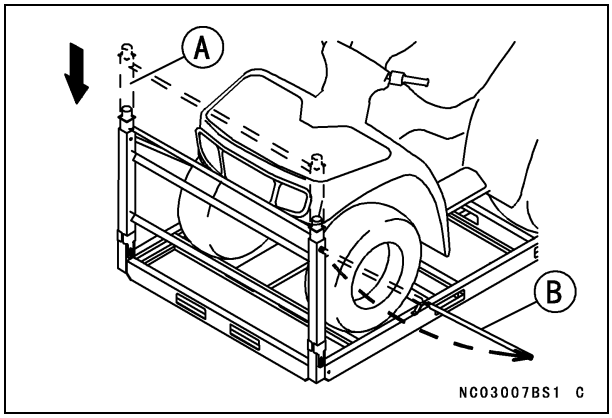


A. Front Upright
B. Hairpin Clip
C. Diagonal Brace

NOTE

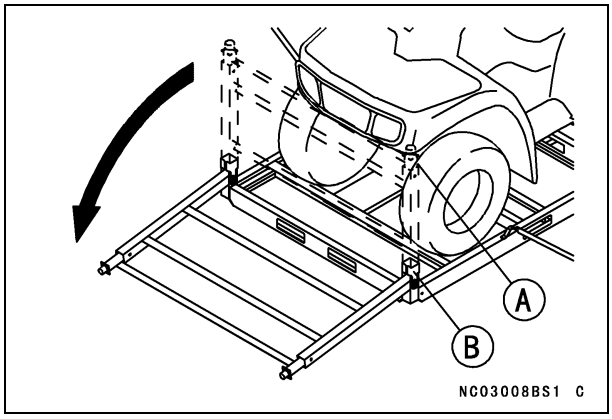
○*Note that the front upright is collapsible (The rear upright is not collapsible.).*

- Hold it up while removing the second pin. After pin removal, allow the upright to collapse.



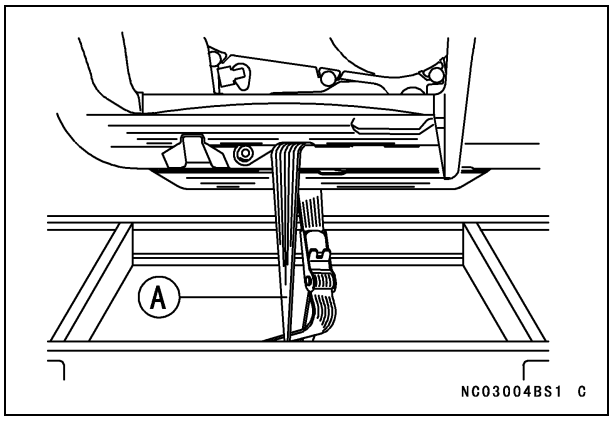
A. Front Upright
B. Diagonal Brace

- Lay down the front upright. To do so, lift up on the front upright (lower section) to disengage its sockets from the pallet.



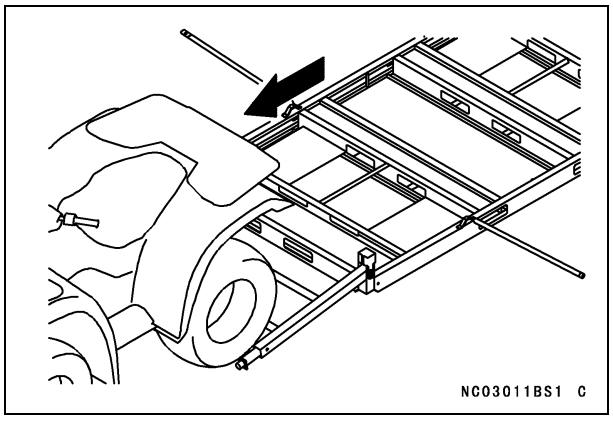
A. Front Upright
B. Lower Section

- Working down the sides, remove the tie-downs (2) which secure the vehicle to the crate pallet.



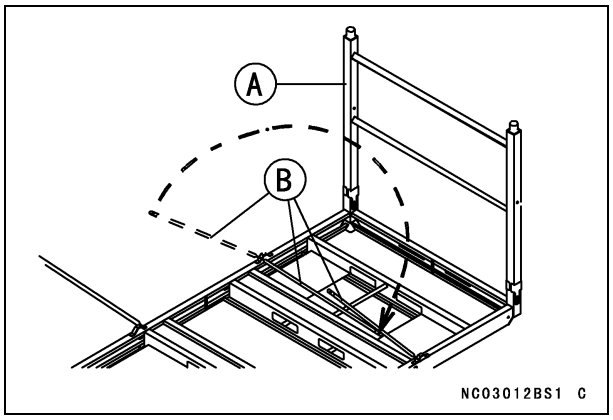
A. Tie-down

- Now the upright may be pivoted down to the ground. (It remains attached to the pallet.) Be careful not to drop it on anyone.
- Roll off the vehicle.



RETURN SHIPMENT (RSC)

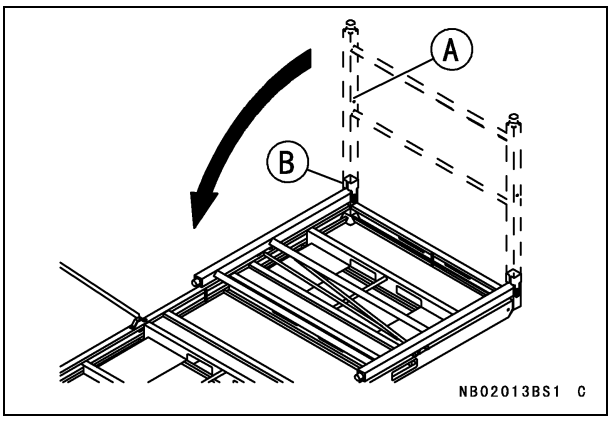
- Prepare the crate for return shipment. In this example, we will begin at the rear of the crate.
- Swing around the diagonal braces so that they will lay on the crate pallet.



A. Rear Upright

B. Diagonal Brace

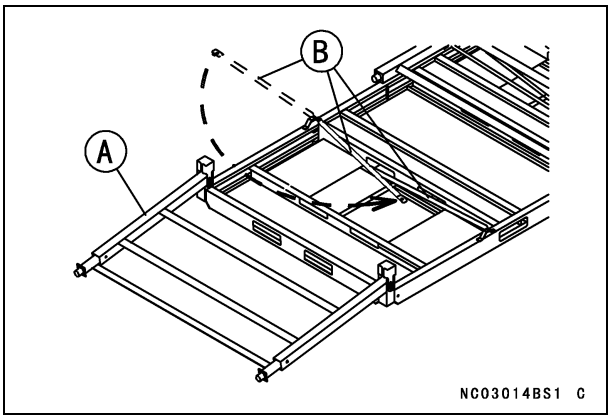
- Pick up slightly on the rear upright to disengage its sockets. Pivot it down onto the crate pallet. Be careful not to drop on anyone.



A. Rear Upright

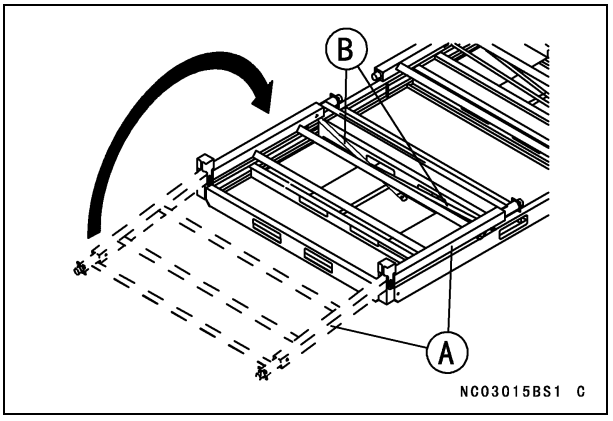
B. Socket

- Repeat these steps for the other upright. (The front upright is shown in this example.)



A. Front Upright

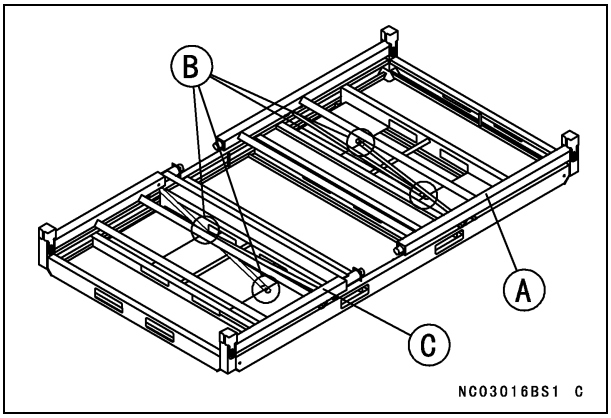
B. Diagonal Brace



A. Front Upright

B. Diagonal Brace

- The clevis pins (4) and hairpin clips (4) are already installed into the braces. Notice that it is necessary to collapse one upright so that enough space exists for both uprights when laid down.



A. Rear Upright

B. Clevis Pins and Hairpin Clips

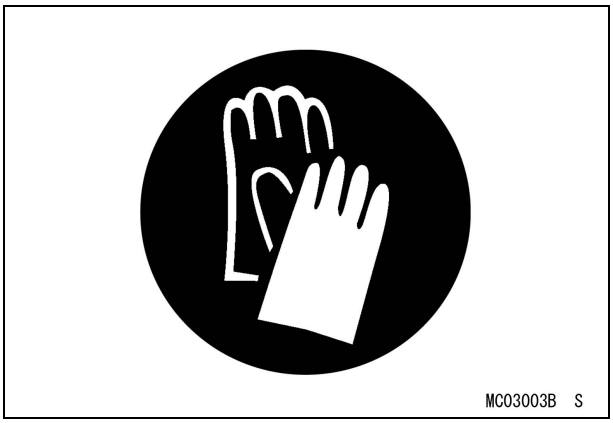
C. Front Upright

- These items are discarded:
  -Outer Cover, Inner Cover, Tie-downs (Qty.2)
- Now the empty RSC may be stacked maximum 12 high for return shipment. Each empty RSC weighs about 97 kg. (215 lbs.) so a stack of 12 is very heavy. The empty crates interlock at each corner for stability. No stacking bands are needed.

Opening Crate (Other than US and Canadian Models)

⚠ WARNING

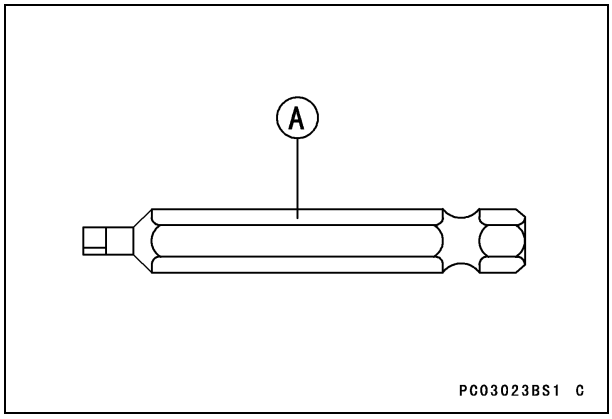
Crates have sharp edges and may have nails or screws that can cause cuts and injury. Always wear protective gloves, boots and eye protection when uncrating to prevent injury.



- Clear a space about 6 m (20 ft) square to give yourself plenty of space to work.
- Place the crate upright on its base.
- Remove the outer cover and inspect the unit for concealed damage. If concealed damage is evident, document the damage as outlined in the Kawasaki Warranty Policies and Procedures Manual before proceeding to uncrate the unit.
- Remove the cardboard cover.

Removing Panels

- Using a BPS3 square drive bit (ex. IMPORT APEX Square Recess “Power Bits-1/4 Hex-size #3” or MAGNA “Insert Bits-size #3” with quick change holder), remove the screws from the sides and ends.



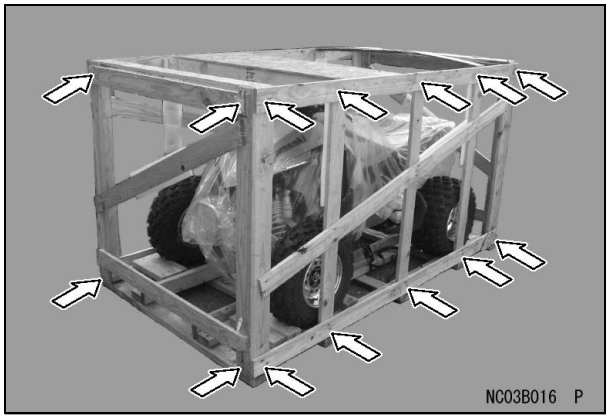
A. “Power Bit (APEX)”

⚠ WARNING

Staples, nails and other fasteners have sharp points that can cause injury. Remove or bend into the wood all staples, nails or other fasteners in the crate base.

Disposable Wooden Crate:

- Take out all the fasteners and remove the top and sides of the crate.

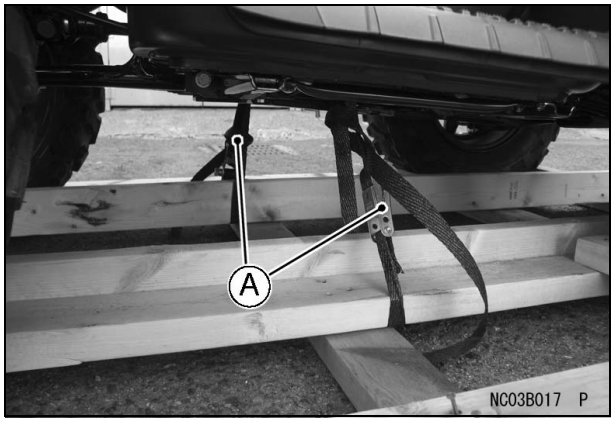


- Remove the top and side panels of the wood crate.
- Remove the inner cover.

NOTICE

Be careful not to puncture a tire with sharp fasteners when rolling off the vehicle from the crate base.

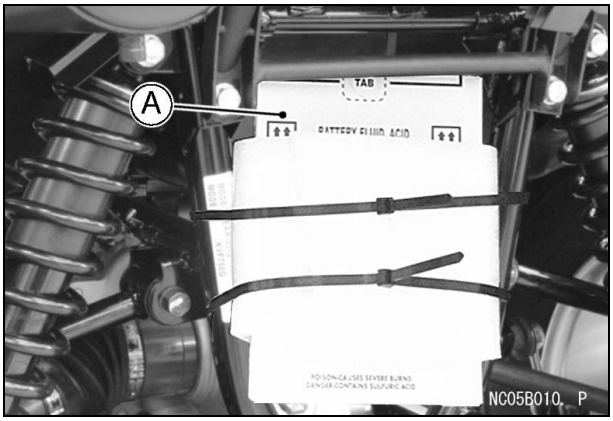
- Remove the tie-downs (2) which secure the vehicle to the crate pallet and roll off the vehicle.



A. Tie-downs

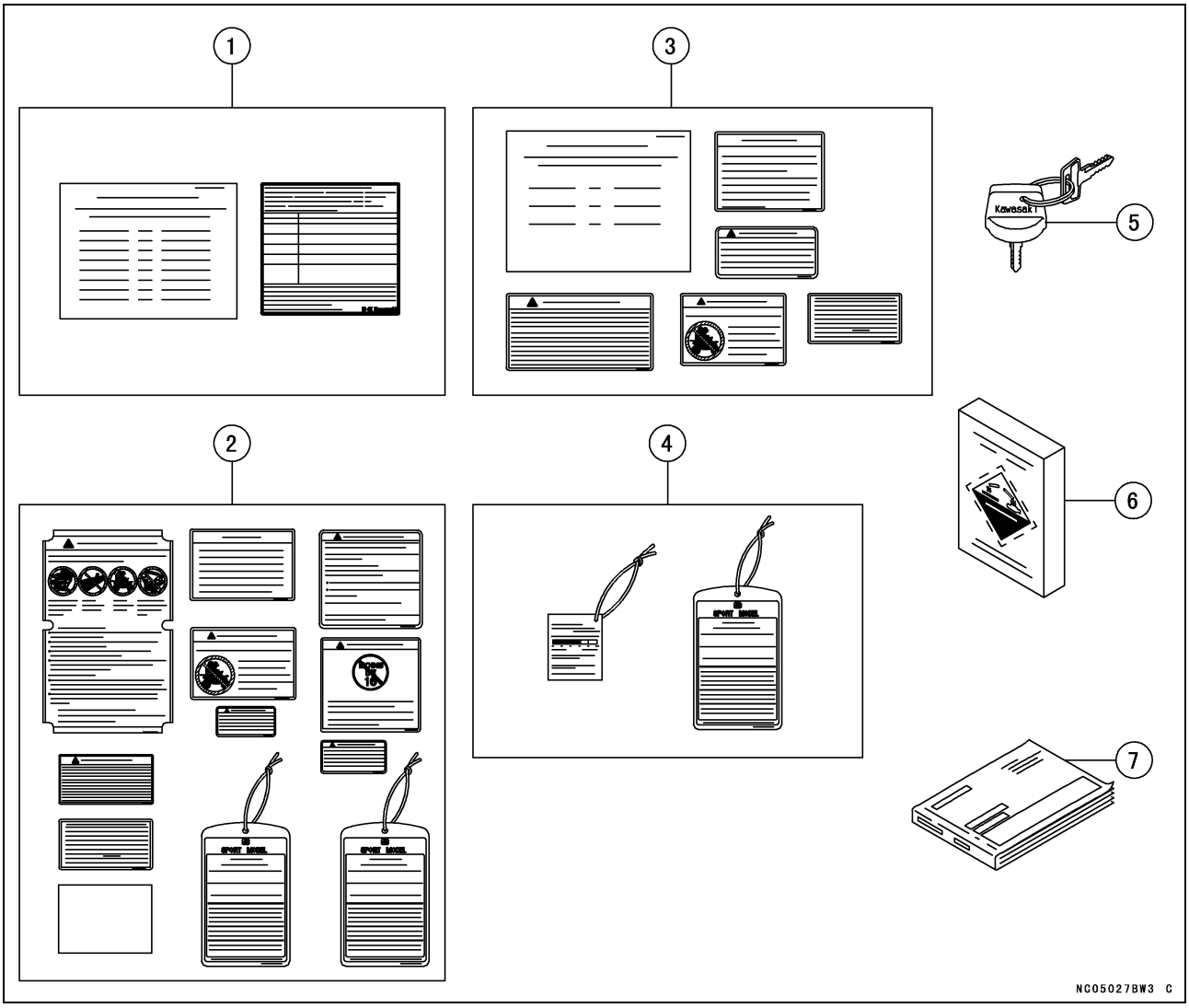
Parts Check

- Remove the parts including Owner's Manual from the parts bag on the footboard.
- Remove the battery electrolyte from the rear end of the chassis.



A. Electrolyte

- Check the parts against the illustrations. There may be minor differences between these illustrations and the actual vehicle parts.



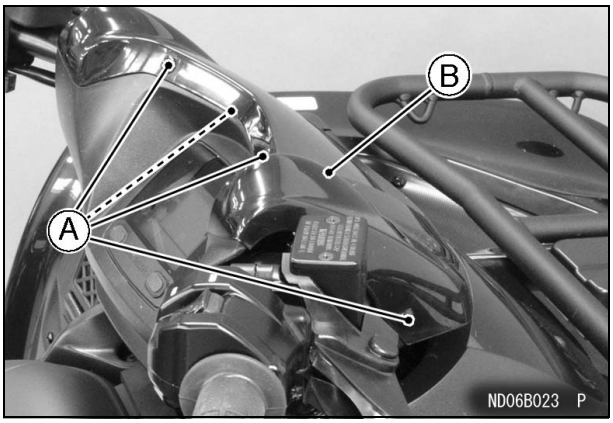
No.	Part Name	Qty	Remarks
1	French Label and Instruction for		
	KVF750GCF Canadian Model only		
	Instruction, Label	1	56030-0403
	Label, Vehicle Emission Information	1	59465-0046
	KVF750HCF Canadian Model only		
	Instruction, Label	1	56030-0730
	Label, Vehicle Emission Information	1	59465-0627
	KVF750JCF Canadian Model only		
	Instruction, Label	1	56030-0731
	Label, Vehicle Emission Information	1	59465-0629
	KVF750LCF Canadian Model only		
	Instruction, Label	1	56030-0717
	Label, Vehicle Emission Information	1	59465-0604
2	French Labels for Canadian Model only		
	Label, Age	1	56040-1325
	Label, General	1	56071-0059
	Label, Passenger	1	56071-0097
	Label, Tire Pressure	1	56071-0074
	Label, Trailer Towing	1	56071-0080
	Label, Shifting	1	56071-0092
	Label, Transmission	1	56070-0039
	Label, Protective Cover	1	56070-1271
	Label with Band, General for English	1	56030-0194
	Label with Band, General for French	1	56030-0197
	Label, Air Cleaner Information	1	56033-0308
	Cover, Label	1	14092-0127
3	French Labels and Instruction for European Model		
	Instruction, Label	1	56030-0337
	Label, Protective Cover	1	56070-1271
	Label, Shifting	1	56071-0092
	Label, Transmission	1	56070-0039
	Label, Passenger	1	56071-0097
	Label, Air Cleaner Information	1	56033-0308
4	For US Model only		
	Label with Band, General	1	56030-0194
	Label with Band, Exhaust Emission Air Index	1	49007-0706
5	Ignition Key	2	–
6	Battery Electrolyte, KMX14-BS	1	12 V 12 Ah
7	Owner's Manual	1	–

Assembly

Handlebar

Handlebar Installation

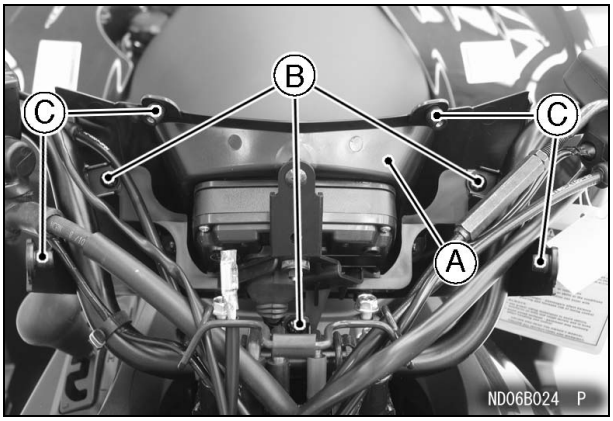
● Remove the screws (D = 5, L = 16) (4) to remove the front handlebar cover.



A. Screws

B. Front Handlebar Cover

● Remove the screws (D = 5, L = 14) (3) to remove the rear handlebar cover.



A. Rear Handlebar Cover

B. Screws

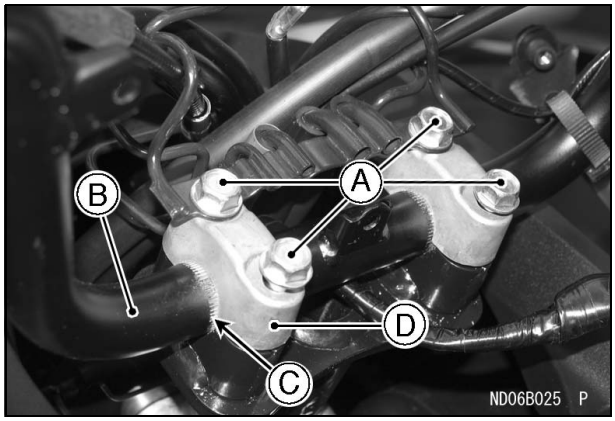
C. Well Nuts

NOTE

○*Be careful not to drop the well nuts when you removing the rear handle cover.*

● Loosen the handlebar clamp bolts and lift the handlebar up.

● Set the handlebar to match its punched mark to the upper edge of the gap between the handlebar clamp.



A. Handlebar Clamp Bolts

B. Handlebar

C. Punched Mark

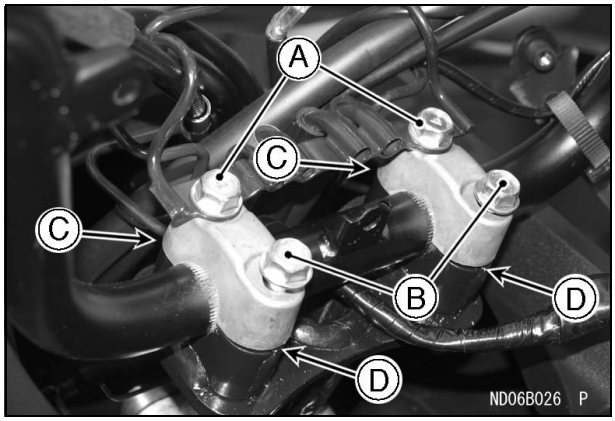
D. Clamp

Handlebar Clamp Bolt Tightening

● Tighten the front clamp bolts first, and then the rear clamp bolts to the specified torque. If the handlebar clamps are correctly installed, there will be no gap at the front and a gap at the rear after tightening.

Handlebar Clamp Bolt Torque:

29 N·m (3.0 kgf·m, 22 ft·lb)



A. Front Clamp Bolts

B. Rear Clamp Bolts

C. No Gap

D. Gap

NOTE

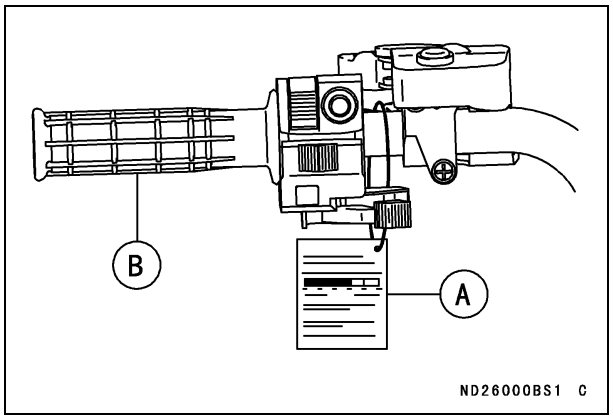
○*It is recommended that the front handlebar cover should be installed after completing the steps in the "Throttle Lever and Cable" and "Differential Control Lever and Cable" sections in the PREPARATION chapter.*

○*It is recommended that the rear handlebar cover should be installed after completing the step in the "Throttle Lever Free Play Adjustment" in the PREPARATION chapter.*

Hangtag

Exhaust Emission Air Index Hangtag Installation (For US Model)

- There is an exhaust emission air index hangtag included into the removed parts. Hang it to the left handlebar as shown.



A. Exhaust Emission Air Index Hangtag (49007-0706)

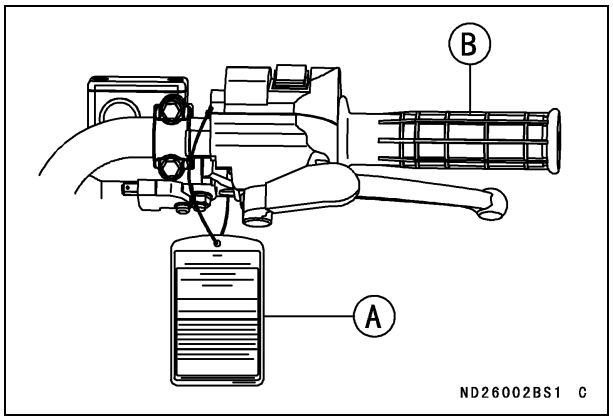
B. Left Grip

NOTE

○*This hangtag is not to be removed before sale.*

General Hangtag Installation (For US and Canadian Models)

- There is a general hangtag included into the removed parts. Hang it to the right handlebar as shown.



A. General Hangtag
(56030-0194, US and Canada English Models)
(56030-0197, Canada French Model)

B. Right Grip

NOTE

○*This hangtag is not to be removed before sale.*

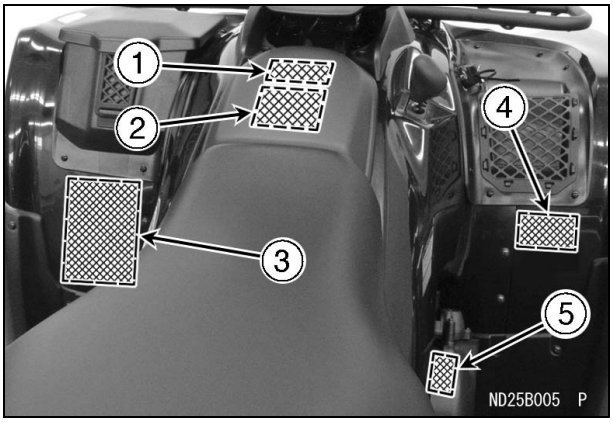
French Labels

For Canadian Model:

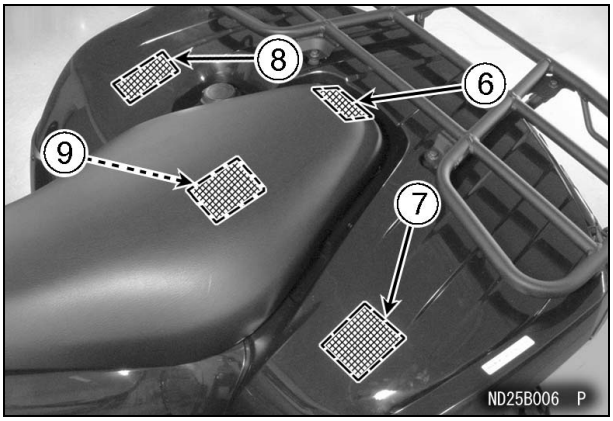
NOTE

○*Stick the French labels onto the English labels on the front fender, rear fender, or the seat only when required.*

- Wipe off any oil or grease from the English labels. Refer to the following photographs in the label locations.
- Peel each French label off the backing sheet and apply it over the English label.



1. Air Cleaner Information (56033-0308)
2. Age Recommendation Warning (56040 -1325)
3. General Warning (56071-0059)
4. Shifting Caution (56070-0092)
5. Protective Cover Warning (56070-1271)

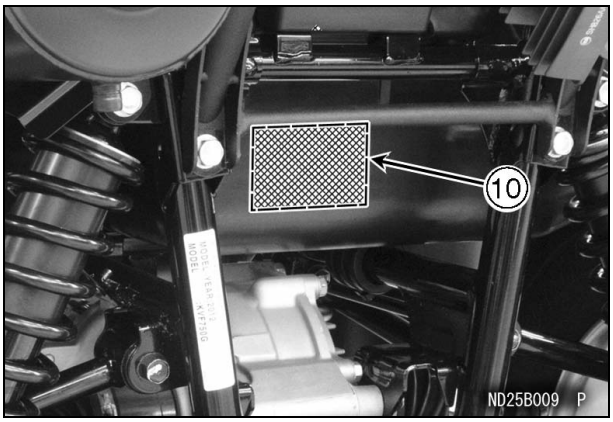


6. Passenger Warning (56071-0097)
7. Tire Pressure & Maximum Loading Warning (56071-0074)
8. Transmission Warning (56070-0039)

*9. Vehicle Emission Control Information
French Label for KVF750GCF Canadian Model only (59465-0046)
French Label for KVF750HCF Canadian Model only (59465-0627)
French Label for KVF750JCF Canadian Model only (59465-0629)
French Label for KVF750LCF Canadian Model only (59465-0604)

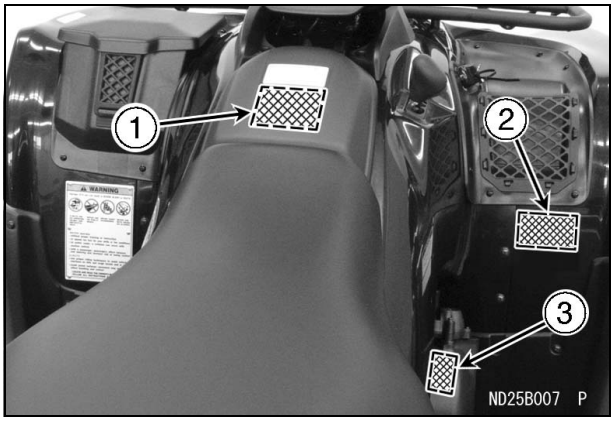
- Stick the label cover (14092-0127) onto the vehicle emission control information label (59465-xxxx).

*: Attached in the back of the seat.

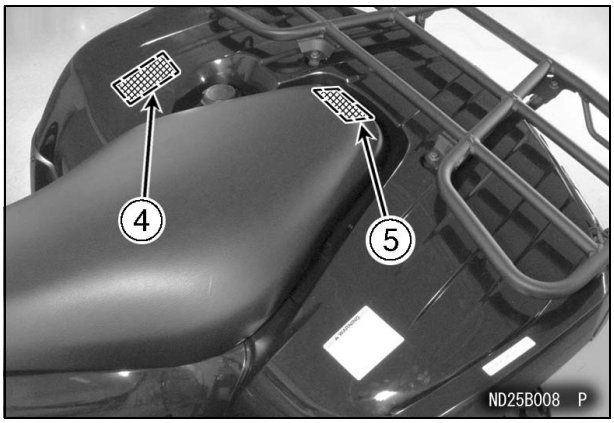


10. Trailer Towing Warning (56071-0080)

For European Model:



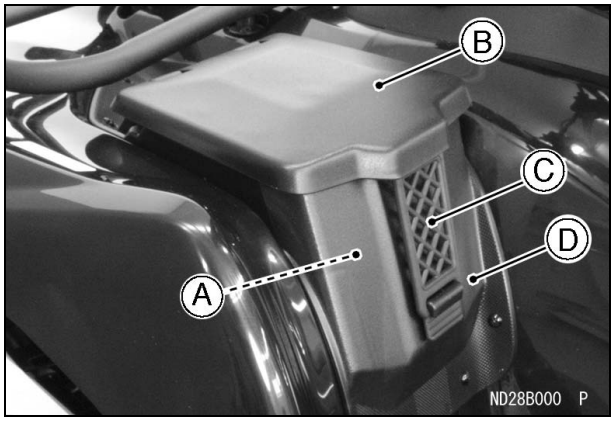
1. Important Air Cleaner Information (56033-0308)
2. Shifting Caution (56071-0092)
3. Protective Cover Warning (56070-1271)



4. Transmission Warning (56070-0039)
5. Passenger Warning (56071-0097)

Owner's Manual

- The storage box is located on the left side front fender. Keep this Owner's Manual and other light items in this storage box.
- Keep the cover securely fastened with the strap when driving the vehicle.



A. Owner's Manual
B. Cover
C. Strap
D. Storage Box

Preparation

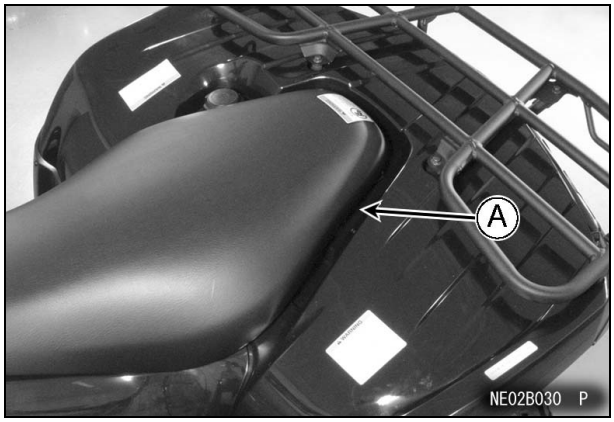
Battery Service

Battery Removal

The battery used in this vehicle is a sealed type and never needs to be refilled. Follow the procedures for activating a new battery to ensure the best possible battery performance.

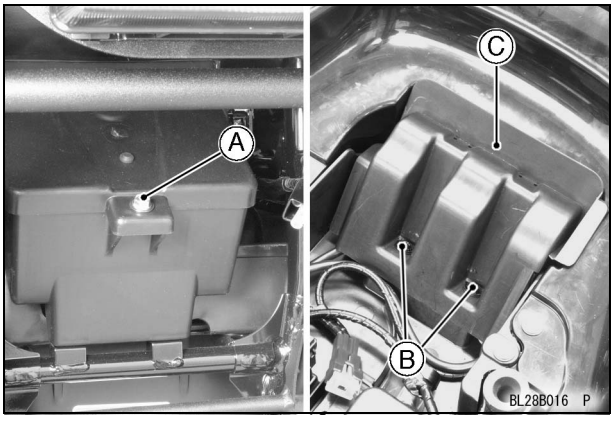
Seat Removal

- Remove the seat by pulling up the seat latch lever located at the left rear end of the seat, and then pull the seat up and to the rear.



A. Seat Latch Lever

- Remove the battery holder bolt (D = 6, L = 16) with collar (D = 6.3) to and screws (D = 6, L = 18) (2) with collars (D = 6.3) (2) remove the battery cover.
- Take the battery out of the battery case. Be careful that any rubber dampers are not pulled out of position.



A. Bolt with Collar
B. Screws with Collars
C. Battery Cover

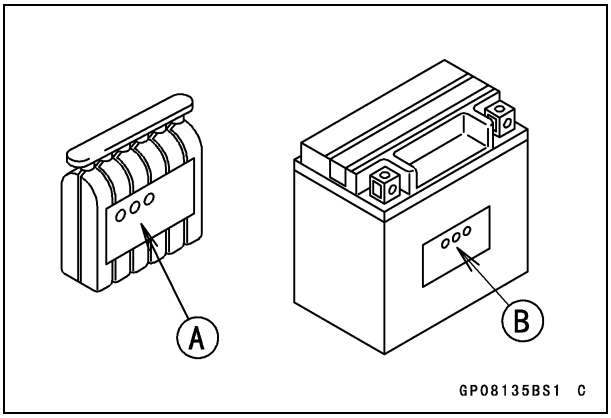
Battery Activation

Electrolyte Filling

- Make sure that the model name of the electrolyte container matches the model name of the battery. These names must be the same.

Battery Model Name

KVF750G/H/J/L: KMX14-BS



A. Model Name of the Electrolyte
B. Model Name of the Battery

NOTICE

Be sure to use the electrolyte container with the same model name as the battery since the electrolyte volume and specific gravity vary with the battery type. This is to prevent overfilling of the electrolyte, shorting the battery life, and deterioration of the battery performance.

NOTICE

Do not remove the aluminum sealing sheet from the filler ports until just prior to use. Be sure to use the dedicated electrolyte container for correct electrolyte volume.

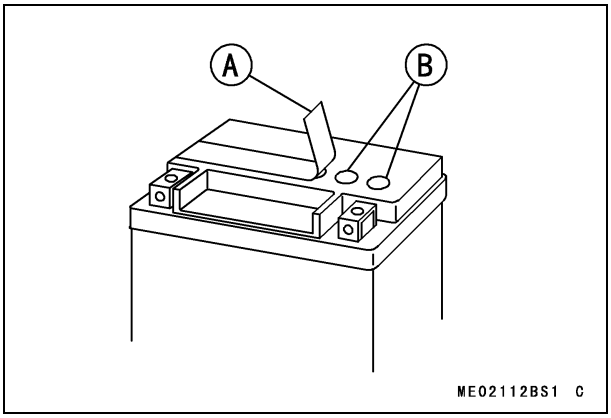
⚠ WARNING

The electrolyte contains sulfuric acid, which can cause severe burns. To avoid sulfuric acid burns, wear protective clothing and safety glasses when handling electrolyte. If the electrolyte touches the skin or eyes, wash the area with liberal amounts of water and seek medical attention for more severe burns.

- Place the battery on a level surface.
- Check to see that the sealing sheet has no peeling, tears, or holes in it.
- Remove the sealing sheet.

NOTE

○*The battery is vacuum sealed. If the sealing sheet has leaked air into the battery, it may require a longer initial charge.*



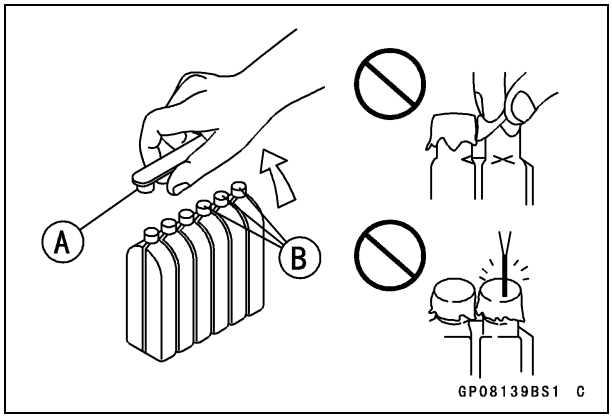
A. Sealing Sheet

B. Filler Ports

- Remove the electrolyte container from the vinyl bag.
- Detach the strip of caps from the container and set aside, these will be used later to seal the battery.

NOTE

○*Do not pierce or otherwise open the sealed cells of the electrolyte container. Do not attempt to separate individual cells.*



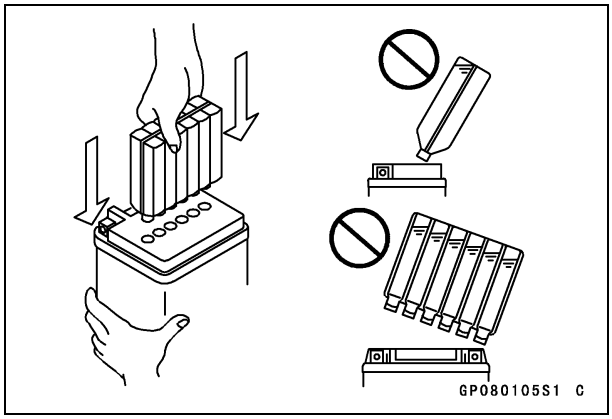
A. Strip of Caps

B. Sealed Cells

- Place the electrolyte container upside down with the six sealed cells into the filler ports of the battery. Hold the container level, push down to break the seals of all six cells. You will see air bubbles rising into each cell as the ports fill.

NOTE

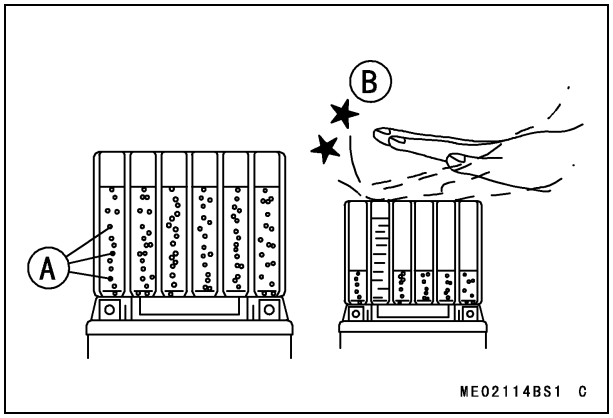
○*Do not tilt the electrolyte container.*



- Check the electrolyte flow.
- If no air bubbles are coming up from the filler ports, or if the container cells have not emptied completely, tap the container a few times.

NOTE

○*Be careful not to have the battery fall down.*



A. Air Bubbles

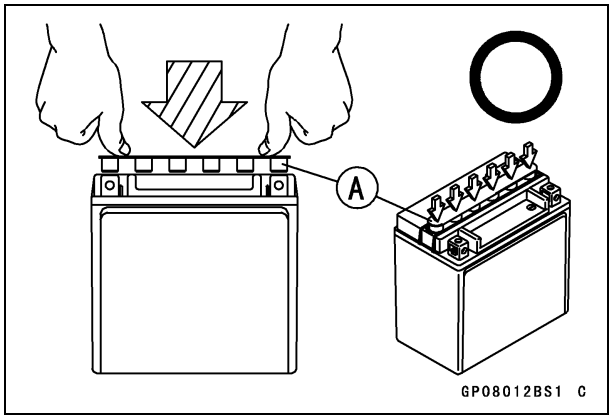
B. Tap the Container

- Keep the container in place. Don't remove the container from the battery, the battery requires all the electrolyte from the container for proper operation.

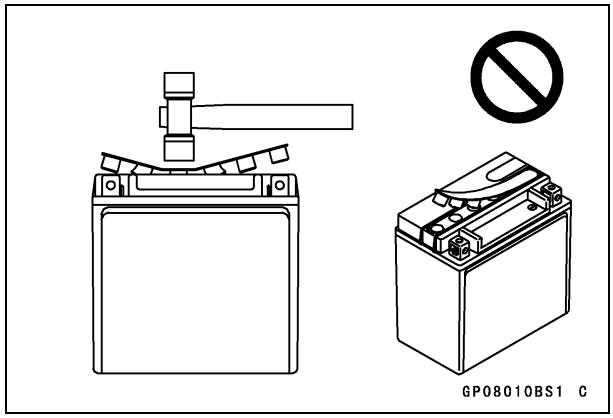
NOTICE

Removal of the container before it is completely empty can shorten the service life of the battery.

- After filling, let the battery sit for 20 ~ 60 minutes with the electrolyte container kept in place, which is required for the electrolyte to fully permeate into the plates.
- Make sure that the container cells have emptied completely, and remove the container from the battery.
- Place the strip of caps loosely over the filler ports, press down firmly with both hands to seat the strip of caps into the battery (don't pound or hammer). When properly installed, the strip of caps will be level with the top of the battery.



A. Strip of Caps



NOTICE

Once the strip of caps is installed onto the battery, never remove the caps, nor add water or electrolyte to the battery.

NOTE

○*Charging the battery immediately after filling can shorten service life.*

Initial Charge

- Newly activated sealed batteries require an initial charge.

Standard Charge: 1.2 A × 5 ~ 10 hours

- If using a recommended battery charger, follow the charger's instructions for newly activated sealed battery.

Kawasaki-recommended chargers:

Battery Mate 150-9
OptiMate PRO 4-S/PRO S/PRO 2
Yuasa MB-2040/2060
Christie C10122S

- If the above chargers are not available, use equivalent one.
- Let battery sit 30 minutes after initial charge, then check voltage using a voltmeter. (Voltage immediately after charging becomes temporarily high. For accurate measuring, let the battery sit for given time.)

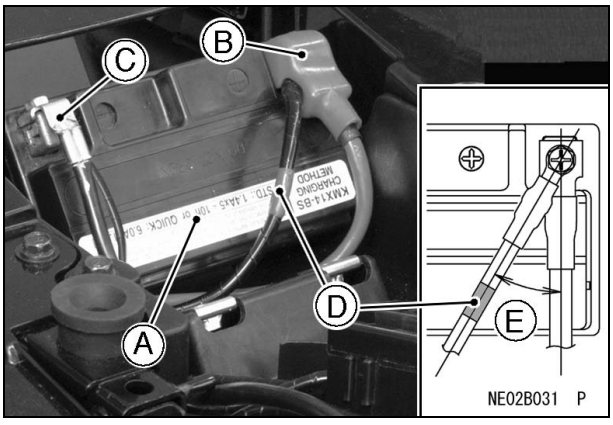
NOTE

○*Charging rates will vary depending on how long the battery has been stored, temperature, and the type of charger used. If voltage is not at least 12.8 volts, repeat charging cycle.*

○*To ensure maximum battery life and customer satisfaction, it is recommended the battery be load tested at three times its amp-hour rating for 15 seconds.*
Re-check voltage and if less than 12.8 volts repeat the charging cycle and load test. If still below 12.8 volts the battery is defective.

Battery Installation

- Turn the ignition switch to OFF.
- Check that the rubber dampers on the battery holder and the battery case are properly in place.
- Put the battery in place.
- Securely connect the red cable with protective cap and the black cable with the round terminal and the red tape to the (+) terminal, and then securely connect the black cable to the (–) terminal.
  On the battery (+) terminal, make sure the round terminal cable is on the red cable making about 30 degree angle with the red cable.
- Put a light coat of grease on the terminals to prevent corrosion.
- Cover the (+) terminal with its protective cap.



A. Battery
B. Positive Terminal (+)
C. Negative Terminal (–)
D. Red Tape
E. About 30°

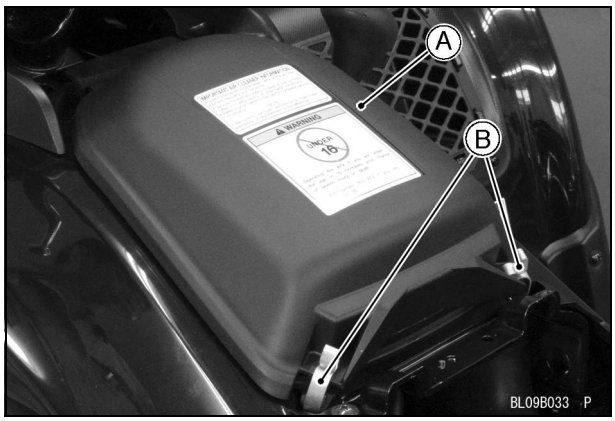
- Reinstall the battery cover, bolt, screws (2) and collars (3) in the reverse order of removal.

Air Cleaner

Air Cleaner Element Inspection

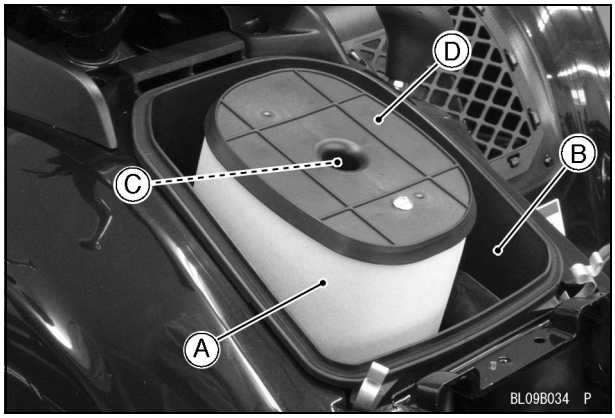
The foam air cleaner element on ATV models is oiled prior to shipping. However, over time the filter will dry and filtration performance will diminish.

- Pull release the snaps and remove the air cleaner housing cap and inspect the foam air cleaner element for proper oiling.



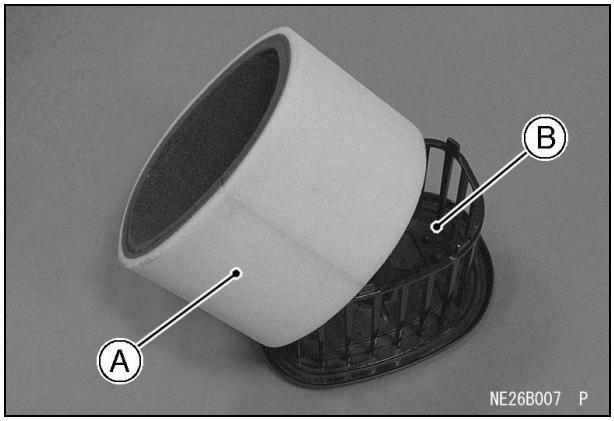
A. Air Cleaner Housing Cap
B. Snaps

- If the air cleaner element is dry, remove the screw (D = 6, L = 5) and washer and pull out the air cleaner element and the element frame from the air cleaner housing.



A. Air Cleaner Element
B. Air Cleaner Housing
C. Screw and Washer
D. Element Frame

- Remove the air filter element from the element frame.



A. Air Cleaner Element

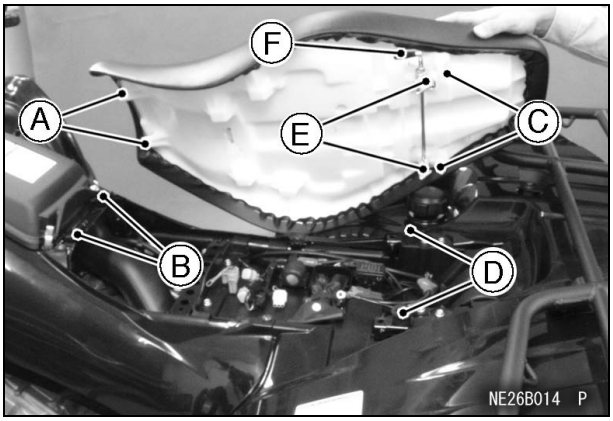
B. Element Frame

- Saturate the air cleaner element with a high-quality foam air filter oil (ex. Kawachem “Foam Filter Oil”, Bel Ray “Foam Filter Oil”, Maxima “FFT Foam Filter Treatment”, or equivalent cohesive type) and make sure that the oil is evenly applied throughout the air cleaner element. Squeeze out the excess oil, but do not wring the air cleaner element as this could cause tearing. In this case, too much oil is better than too little. Finally pat the inside of the air cleaner element with a paper towel to remove any excess oil.
- Install the air cleaner element to the element frame.
- Insert and tighten the screw to the specified torque.

  Torque : 3.5 N·m (0.36 kgf·m, 31 in·lb)
- Reinstall the air cleaner housing cap.

Seat Installation

- Align the front hooks with the front receivers and slide the seat forward. Make sure that the rear hooks align to their rear receivers. Push the seat with both hands around the rear hooks and make sure there is a click sound of the latches engaging.



A. Front Hooks

B. Front Receivers

C. Rear Hooks

D. Rear Receivers

E. Latches

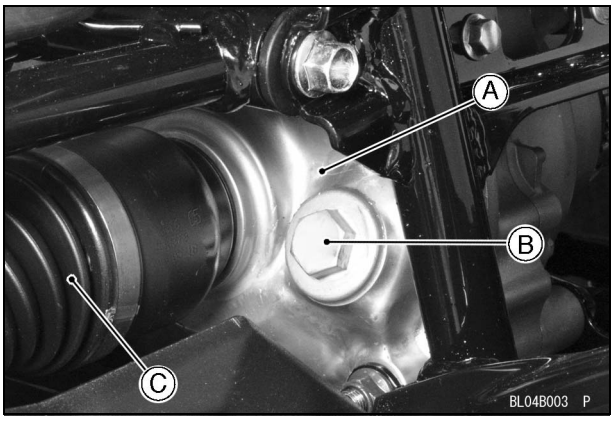
F. Latch Lever

- Pull up the rear end of the seat to make sure it is securely locked.

Front Final Gear Case Oil

Front Final Gear Case Oil Level Inspection

- With the vehicle level front-to-rear and side-to-side, remove the filler cap from the front final gear case.



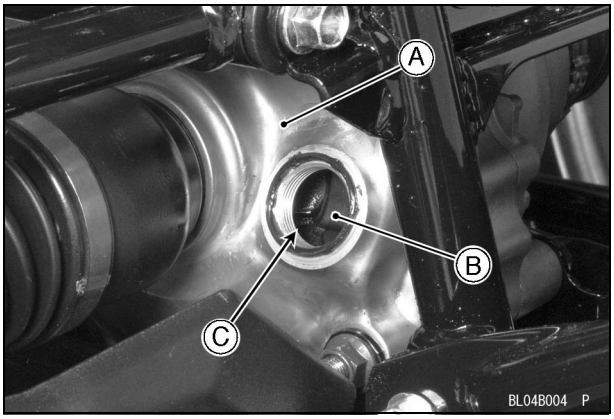
A. Front Final Gear Case

B. Filler Cap

C. Front Axle Shaft

NOTICE
Be careful not to allow any dirt or foreign materials to enter the front final gear case.

- Check the oil level. The oil level should come to the bottom thread of the filler opening. If it is insufficient, add oil through the oil filler opening as necessary.

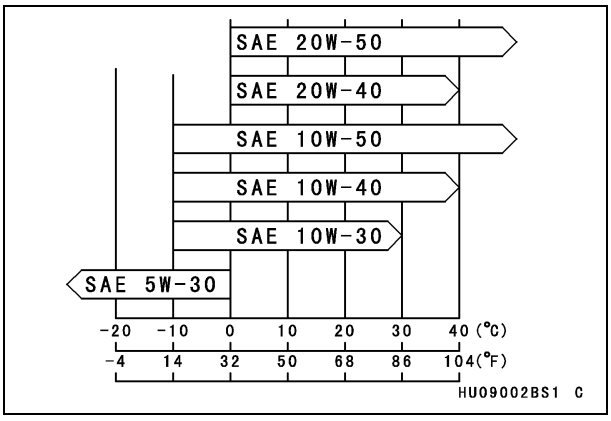


A. Front Final Gear Case
B. Filler Opening
C. Bottom Thread

Front Final Gear Case Oil (Equivalent to engine oil)

Type: **API SG, SH, SJ, SL or SM with JASO MA, MA1 or MA2**
Viscosity: **SAE 10W-40**
Capacity: **0.40 L (0.42 US qt)**

Although 10W-40 engine oil is the recommended oil for most conditions, the oil viscosity may need to be changed to accommodate atmospheric conditions in your riding area.



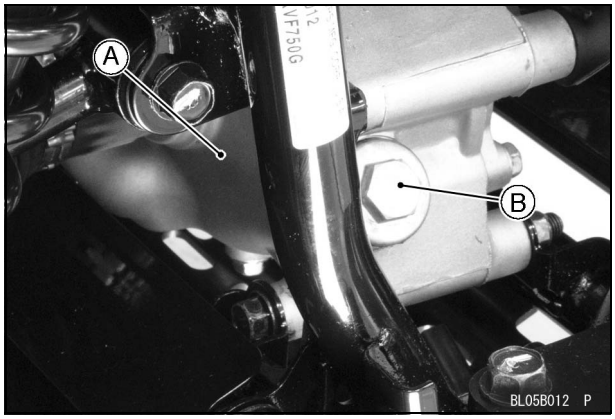
● Install the filler cap.

Oil Filler Cap Torque:
29 N·m (3.0 kgf·m, 22 ft·lb)

Rear Final Gear Case Oil

Rear Final Gear Case Oil Level Inspection

● With the vehicle level front-to-rear and side-to-side, remove the filler cap from the rear final gear case.



A. Rear Final Gear Case
B. Filler Cap

NOTICE

Be careful not to allow any dirt or foreign materials to enter the rear final gear case.

● Check the oil level. The oil level should come to the bottom thread of the filler opening. If it is insufficient, add oil through the oil filler opening as necessary.

NOTE

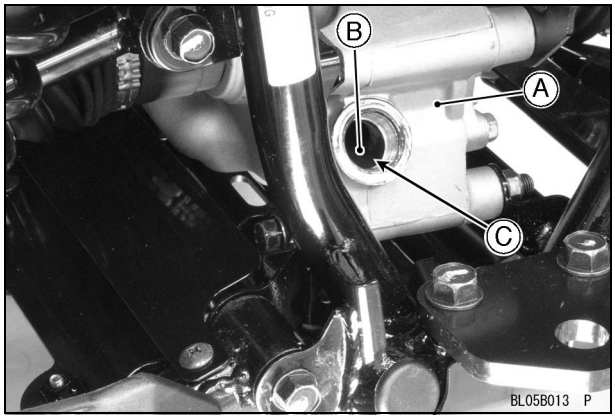
○*Front and rear final gear cases use different types of oils. Use the specified type and brand of oil in each final gear case.*

Rear Final Gear Case Oil

Type: **Mobil Fluid 424,**
CITGO TRANSGARD TRACTOR HYDRAULIC FLUID
or
EXXON HYDRAUL 560
Capacity: **0.72 L (0.76 US qt)**

NOTE

○*Do not apply front final gear case oil into the rear final gear case. Apply only the specified oil. The rear final gear case contains brake plates which require a special oil type. Also the two different oil types for the rear gear case oil must not be mixed in use.*



A. Rear Final Gear Case
B. Filler Opening
C. Bottom Thread

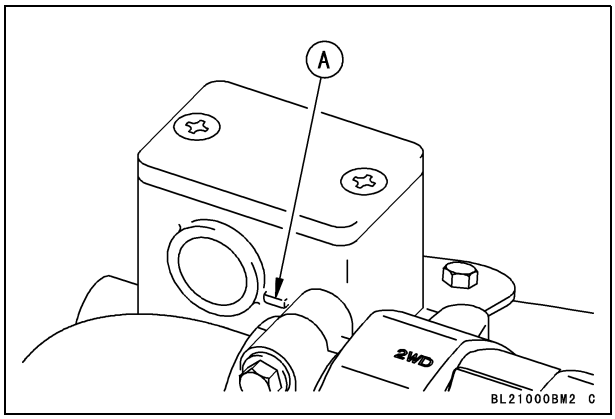
- Install the filler cap.

Oil Filler Cap Torque:
29 N·m (3.0 kgf·m, 22 ft·lb)

Front Brake

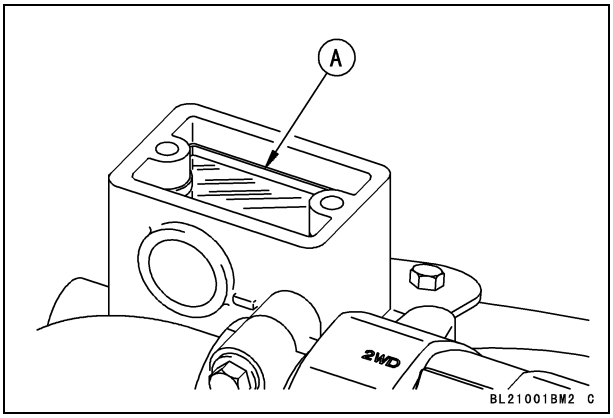
Front Brake Fluid Level Inspection

- Position the front brake reservoir horizontal, and check that the fluid level in the reservoir is higher than the lower level line.



A. Lower Level Line

- If the fluid level in the reservoir is lower than the lower level line, check for fluid leaks in the front brake lines and fill the reservoir.
- Loosen the screws to remove the front brake fluid reservoir cap and diaphragm.
- Fill the reservoir to the upper level line with DOT4 brake fluid. Inside the front brake reservoir is a stepped line showing the upper level line.



A. Upper Level Line

⚠ WARNING

When working with the disc brake, observe the precautions listed below.

1. Never reuse old brake fluid.
2. Do not use fluid from a container that has been left unsealed or that has been open for a long time.
3. Do not mix two types and brands of fluid for use in the brake. This lowers the brake fluid boiling point and could cause the brake to be ineffective. It may also cause the rubber brake parts to deteriorate.
4. Don't leave the reservoir cap off for any length of time to avoid moisture contamination of the fluid.
5. Don't change the fluid in the rain or when a strong wind is blowing.
6. Brake fluid quickly ruins painted surfaces; any spilled fluid should be completely wiped up immediately.
7. If any of the brake line fittings or the bleed valve is opened at any time, the **AIR MUST BE BLED FROM THE BRAKE LINE.**

- Operate the front brake lever several times.
- If it feels spongy, there might be air in the brake line.
- If necessary, bleed the air in the rear brake line.
- Also check for fluid leakage around the fittings, and bleed the air in the front brake lines.

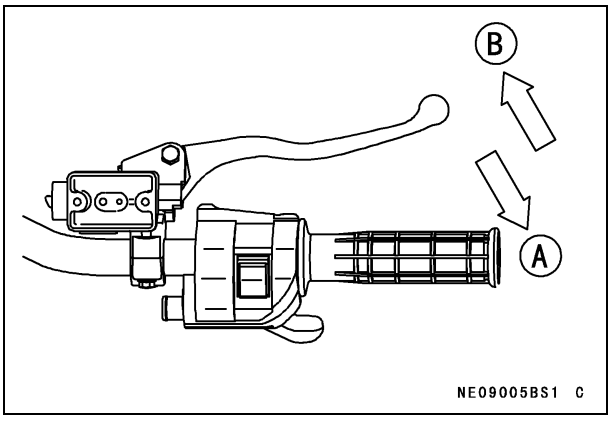
Brake Line Air Bleeding

- With the front brake reservoir horizontal, remove the front brake reservoir cap and diaphragm, and check that there is plenty of fluid in the reservoir.

NOTE

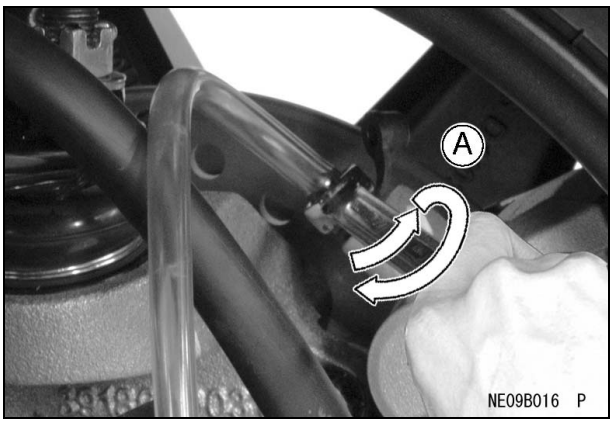
○*The fluid level must be checked several times during the bleeding operation and replenished as necessary. If the fluid in the reservoir runs completely out any time during bleeding, the bleeding operation must be done over again from the beginning since air will have entered the line.*

- Attach a clear plastic hose to the bleed valve on the caliper and run the other end of the hose into a container.
- With the reservoir cap off, slowly pump the brake lever several times until no air bubbles can be seen rising up through the fluid from the holes at the bottom of the reservoir. This bleeds the air from the front brake master cylinder end of the line.
- Pump the brake lever a few times until it becomes hard and then, holding the lever squeezed, quickly open (turn counterclockwise) and close the bleed valve. Then release the lever. Repeat this operation until no more air can be seen coming out into the plastic hose.



A. Hold the brake lever applied.

B. Release the brake lever.



A. Quickly open and close the bleed valve.

- Repeat the previous step one more time for the other front disc brake.
- When air bleeding is finished, check that the fluid is between the upper and lower level lines.
- Install the diaphragm and the reservoir cap.
- Tighten the bleed valve(s) to the specified torque.

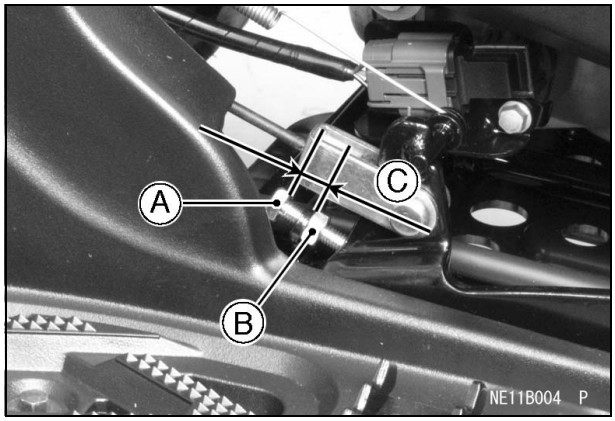
Torque : 7.8 N·m (0.8 kgf·m, 69 in·lb)

- Apply the brake lever forcefully for a few seconds, and check for fluid leakage around the fittings.

Rear Brake

Brake Pedal Position Inspection

- Measure the adjusting bolt length. It should be 5 mm (0.20 in.).



A. Adjusting Bolt

B. Locknut

C. 5 mm (0.20 in.)

Brake Pedal Position Adjustment

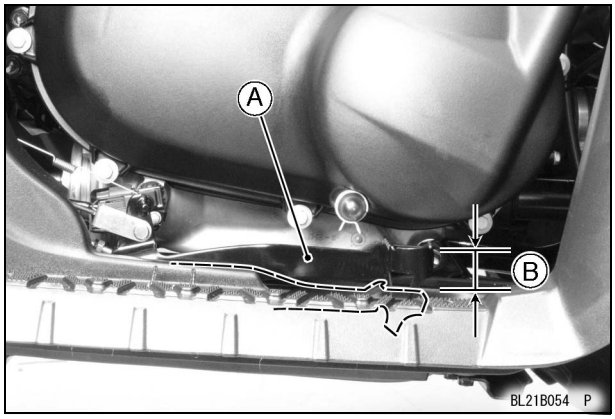
- To adjust the pedal position, loosen the locknut, turn the adjusting bolt and make the bolt length 5 mm (0.20 in.), and then tighten the locknut. Now adjust the brake pedal free play.

Brake Pedal Free Play Inspection

- Release the parking brake.
- Measure the distance the brake pedal moves before the brake starts to take hold. Pedal free play should be 15 ~ 25 mm (0.6 ~ 1.0 in.).

Brake Pedal Free Play:

15 ~ 25 mm (0.6 ~ 1.0 in.)

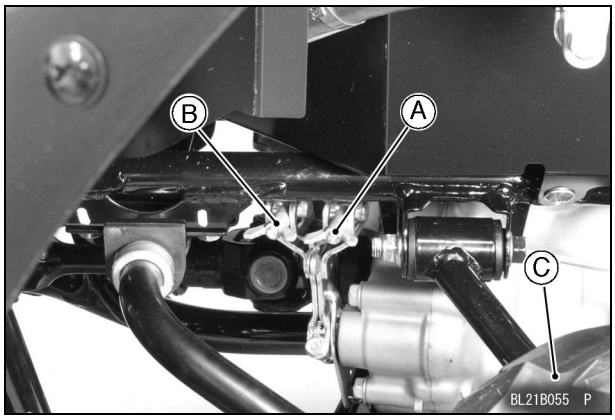


A. Brake Pedal

B. 15 ~ 25 mm (0.6 ~ 1.0 in.)

Brake Pedal Free Play Adjustment

- To adjust the pedal free play, turn the brake pedal adjuster at the rear end of the brake cable.



A. Brake Lever Adjuster

B. Brake Pedal Adjuster

C. Rear Wheel (Left Side)

Rear Brake (Parking) Lever Free Play Inspection

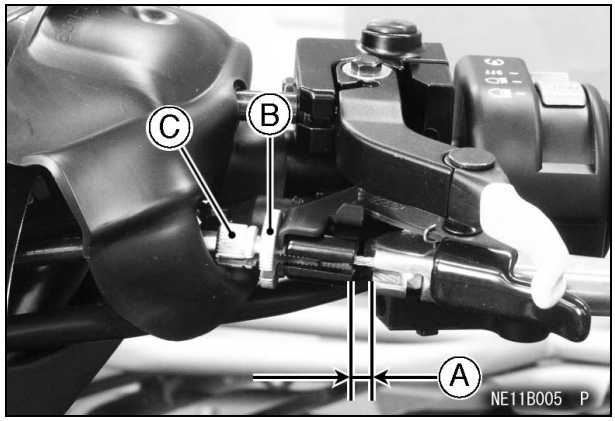
- Check the rear brake lever free play. If the free play is incorrect, adjust the free play.

Rear Brake Lever Free Play:

1 ~ 2 mm (0.04 ~ 0.08 in.)

Rear Brake (Parking) Lever Free Play Adjustment

- Slide the rubber cover.
- Loosen the locknut and turn the adjuster at the brake lever in as far as it will go.
- Tighten the locknut.
- Turn the adjuster at the rear end of the brake cable so that the brake lever has 1 ~ 2 mm (0.04 ~ 0.08 in.) of free play.



A. 1 ~ 2 mm (0.04 ~ 0.08 in.)

B. Locknut

C. Adjuster

NOTE

○*Since the above two free play adjustments (pedal and lever) affect each other, make them at the same time.*

- After adjustments, check for brake drag (there should be none) and effectiveness.

Suspension

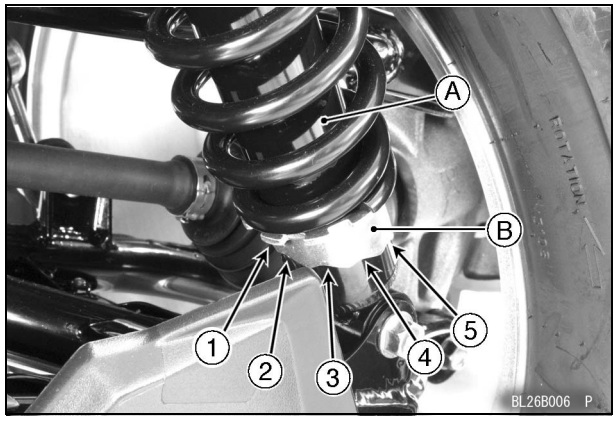
Front and Rear Shock Absorber Spring Preload Adjustment

- Check the position of the spring preload adjusting sleeves (Turn here with a hook wrench) on the front and rear shock absorbers.

STD Position:

Front: No. 2

Rear: No. 2



A. Rear Shock Absorber

B. Spring Adjusting Sleeve

- Turn the adjusting sleeve on the shock absorbers to the standard position with a hook wrench.
- Check to see that each pairs of adjusting sleeves are turned to the same relative position.

⚠ WARNING

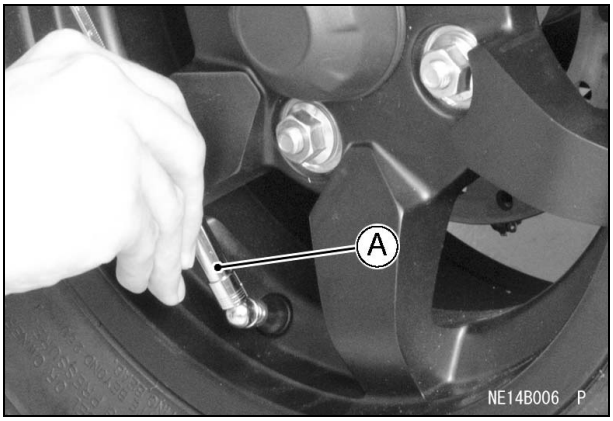
If a pair of adjusting sleeves are not adjusted equally, handling may be impaired and a hazardous condition may result. Adjust the sleeves equally.

Tire Air Pressures

Tire Air Pressure Adjustment

- Adjust the pressures to the specified values in the front and rear, and make sure to tighten the caps securely.

Tire Air Pressures (when cold):
[Normal Use]
Front: 35 kPa (0.35 kgf/cm², 5 psi)
Rear: 35 kPa (0.35 kgf/cm², 5 psi)



A. Air Pressure Gauge

NOTE

○*To accurately measure the pressure, use a low air pressure gauge included in the tool kit of ATV. Do not use an automotive air pressure gauge because the specified tire air pressures of ATV is too low.*

Fuel

⚠ WARNING

Gasoline is extremely flammable and can be explosive under certain conditions, creating the potential for serious burns. When filling the tank, turn the ignition switch to "OFF". Do not smoke. Make sure the area is well-ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.

- Fill the fuel tank with one gallon/or four liters of unleaded gasoline. Use gasoline with a minimum octane rating indicated in the following table.

The antiknock index is an average of the Research Octane Number (RON) and the Motor Octane Number (MON), as shown in the table.

For US and Canadian Models

Octane Rating Method		Minimum Rating
Antiknock Index	(RON + MON) / 2	87

For Other than US and Canadian Models

Octane Rating Method	Minimum Rating
Research Octane Number (RON)	91

- Close the fuel tank cap and check for any leaks and correct them.

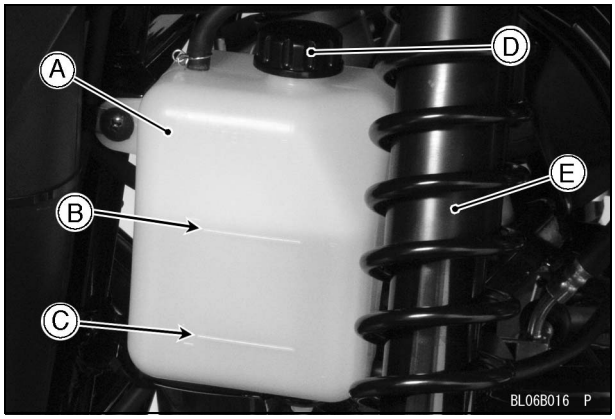
Coolant

Coolant Reservoir Tank Level Check

- Situate the vehicle on level ground.
- Check the coolant level through the coolant level gauge on the reserve tank. The coolant level should be between the "F" (Full) and "L" (Low) marks.

NOTE

○*Check the level when the engine is cold (room or atmospheric temperature).*



A. Reserve Tank
B. "F" (Full) Mark
C. "L" (Low) Mark
D. Cap
E. Front Shock Absorber (Right Side)

- If the amount of coolant is insufficient, unscrew the cap from the reserve tank and add coolant through the filler opening to the "F" (Full) mark. Install the cap.

Recommended Coolant Solution

Coolant Mixture Ratio:

Water 50%: Coolant 50% (1:1)

Recommended Coolant:

Permanent type coolant (ethylene glycol plus corrosion and rust inhibitor chemicals for aluminum engines and radiator).

NOTE

○*A permanent type of antifreeze is installed in the cooling system when shipped. It is colored green and contains ethylene glycol. It is mixed at 50% and has the freezing point of –35°C (–31°F).*

Engine Oil

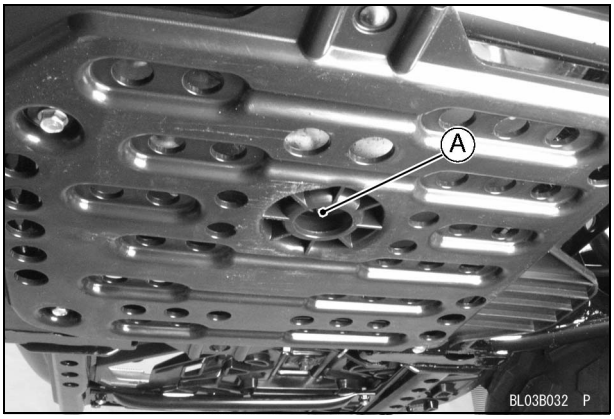
Engine Oil Level Inspection

NOTE

○*This vehicle's engine is filled with 10W-30 oil from the factory. DO NOT DRAIN and refill the crankcase before use. Check oil level and drain plug tightness.*

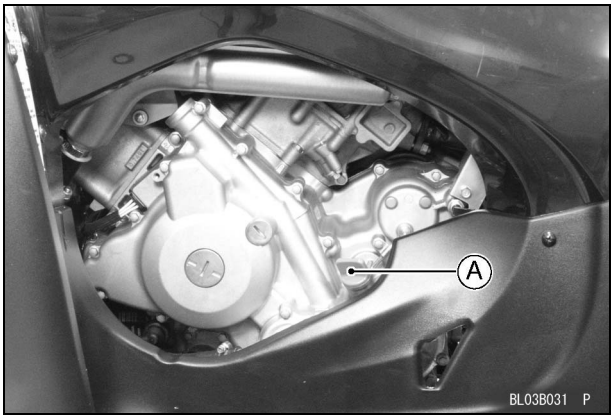
Engine Oil Drain Plug Torque:

20 N·m (2.0 kgf·m, 15 ft·lb)



A. Oil Drain Plug

- Park the vehicle so that it is level, both side-to-side and front-to-rear.
- Before starting the engine, check that the engine has oil.
- Unscrew the oil filler plug on the lower left side of the engine and wipe the dipstick dry. Then screw it in again. Unscrew the plug and check that the engine has oil.



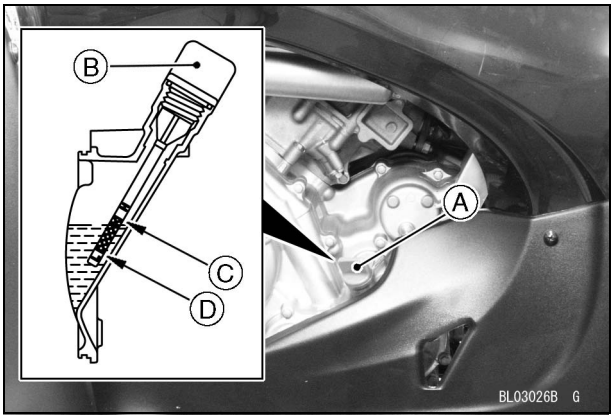
A. Oil Filler Plug

- When replacing the plug, be sure the O-ring is in place, and screw the plug in finger tight.

NOTICE

If the engine is run without oil, it will be severely damaged.

- Start the engine and run it for several minutes at idle speed. Stop the engine, then wait several minutes until the oil settles.
- Unscrew the oil filler plug, wipe its dipstick dry, and screw it in again.
- Unscrew the plug and check the oil level. The oil level should be between the H (High) and L (Low) lines on the dipstick.



A. Oil Filler Plug and Dipstick

B. Screw in the oil filler plug fully to inspect the oil level

C. "H" (High) Line

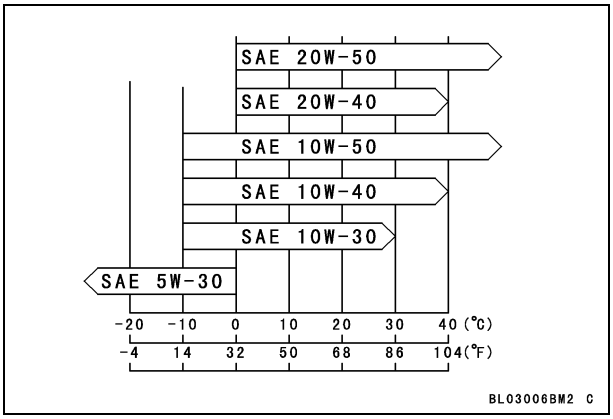
D. "L" (Low) Line

- If the oil level is too high, remove the excess oil through the oil filler opening using a syringe or some other suitable device.
- If the oil level is too low, add the oil to reach the correct level.
- Screw the plug in finger tight.

Recommended Engine Oil

Type:	**API SG, SH, SJ, SL or SM with JASO MA, MA1 or MA2**
Viscosity:	**SAE 10W-40**
Capacity:	**1.9 L (2.0 US qt)**
	[when filter is not removed]
	2.0 L (2.1 US qt)
	[when filter is removed]

Although 10W-40 engine oil is the recommended oil for most conditions, the oil viscosity may need to be changed to accommodate atmospheric conditions in your riding area.



Throttle Lever and Cable

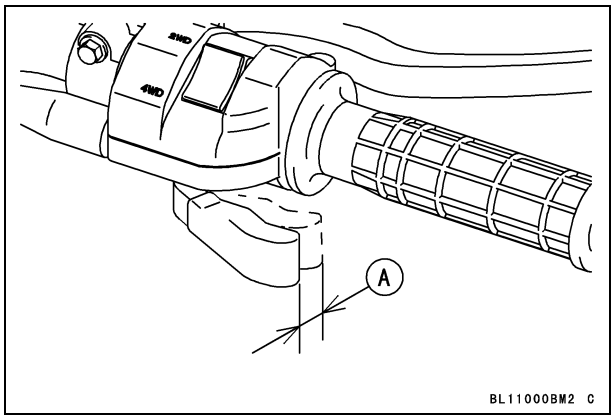
Throttle Lever Free Play Inspection

- Check the throttle lever free play. If the free play is incorrect, adjust the throttle cable.

Throttle Lever Free Play:

2 ~ 3 mm (0.08 ~ 0.12 in.)

- Check that the throttle lever moves smoothly from full open to close, and the throttle closes quickly and completely in all steering positions by the return spring. If the throttle lever does not return properly, check the throttle lever free play, cable routing, and for possible cable damage. Then lubricate the throttle cable.



A. 2 ~ 3 mm (0.08 ~ 0.12 in.)

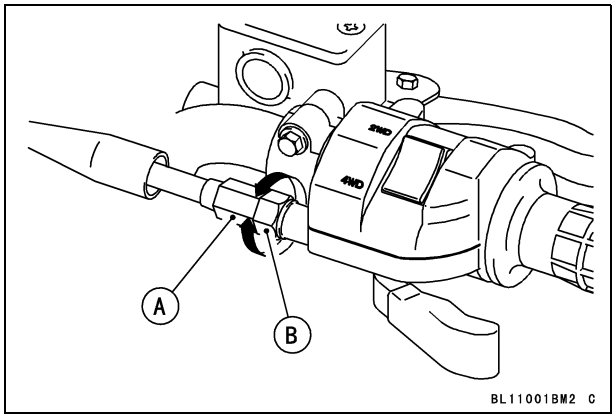
- Run the engine at the idle speed, and turn the handlebar all the way to the right and left to ensure that the idle speed does not change. If the idle speed increases, check the throttle lever free play and the cable routing.

⚠ WARNING

Operation with incorrectly routed or improperly adjusted cables could result in an unsafe riding condition. Be sure the cables are routed correctly and properly adjusted.

Throttle Lever Free Play Adjustment

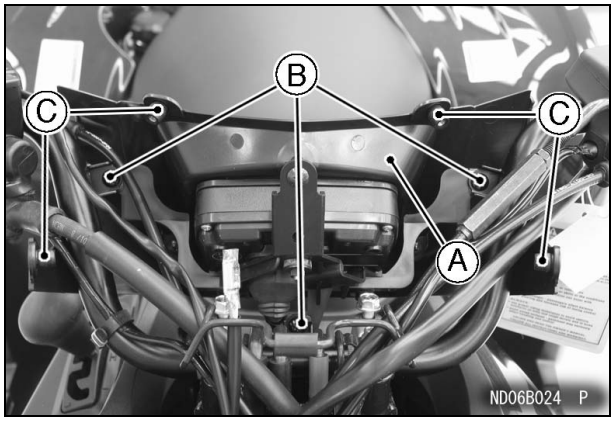
- Slide the rubber cover off of the adjuster at the throttle case.
- Loosen the locknut and turn the throttle cable upper adjuster to obtain the specified free play.
- Tighten the locknut and reinstall the rubber cover.



A. Adjuster

B. Locknut

- Reinstall the rear handlebar cover with the screws (D = 5, L = 14) (3), and tighten them.



A. Rear Handlebar Cover

B. Screws

C. Well Nuts

Variable Differential Control Lever and Cable

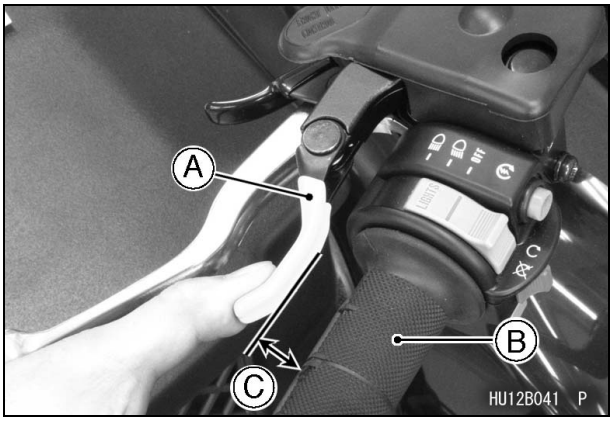
By pulling the control lever toward the handlebar, the driving force of the front wheels can be equalized to provide more traction. If the differential control lever has excessive play, adjust the differential control cable.

Variable Differential Control Lever Position Inspection

- Pull the variable differential control lever towards the handlebar grip with a spring scale until it reads 30 N (3 kgf, 7 lb) of force. The clearance between the control lever and grip should be 20 mm (0.8 in.). If the clearance is not within specification, adjust the cable.

Variable Differential Control Lever Position:

20 mm (0.8 in.) from the grip



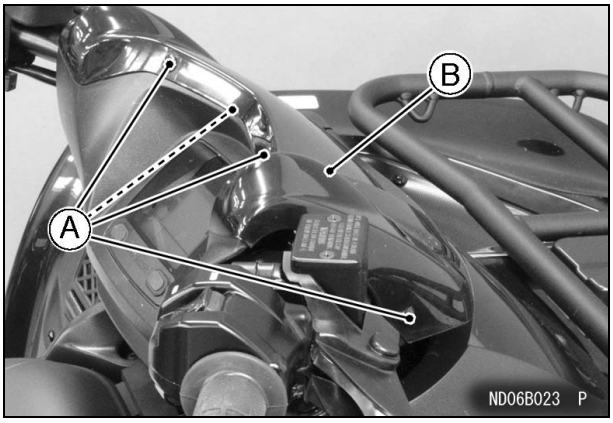
A. Variable Differential Control Lever

B. Handlebar Grip

C. 20 mm (0.8 in.)

Variable Differential Control Lever Position Adjustment

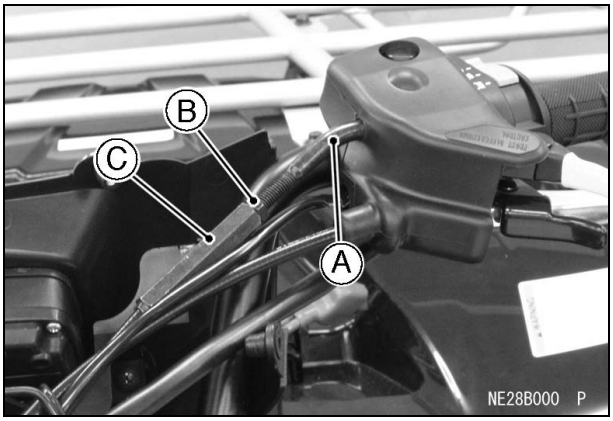
- Loosen the screws (D = 5, L = 16) (4) to remove bolt front handle cover.



A. Screws (D = 5, L = 16)

B. Front Handle Cover

- Loosen the locknut at the middle of differential control cable.
- Turn the adjuster until the cable has the proper amount of play.
- Tighten the locknut after adjustment.



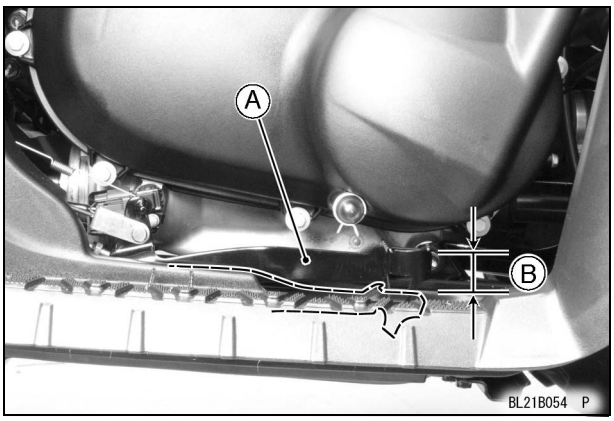
A. Variable Differential Control Cable
B. Locknut
C. Adjuster

- Reinstall the front handlebar cover with the screws (D = 5, L = 16) (4), and tighten them.

Rear Brake Light Switch Adjustment

Rear Brake Light Switch Adjustment

- Turn the ignition switch to "ON" position.
- Depress the brake pedal. The brake light should go on after about 10 mm (0.4 in.) of pedal travel.

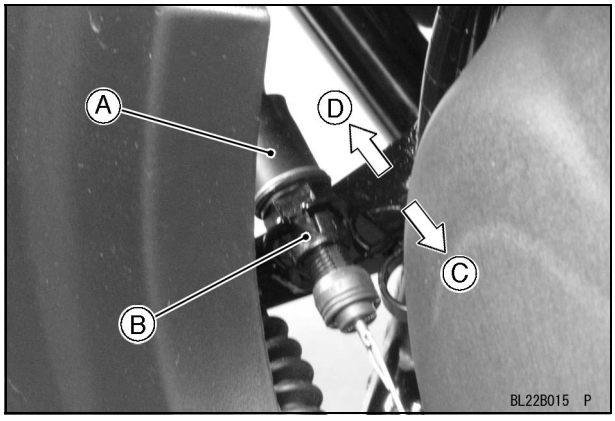


A. Brake Pedal
B. 10 mm (0.4 in.)

- To adjust the brake light switch (located near the brake pedal), move the switch forward or rearward by turning the adjusting nut.

NOTICE

To avoid damaging the electrical connections inside the switch, be sure that the switch body does not turn during adjustment.



A. Brake Light Switch
B. Adjusting Nut
C. Lights later
D. Lights sooner

Headlight Beam

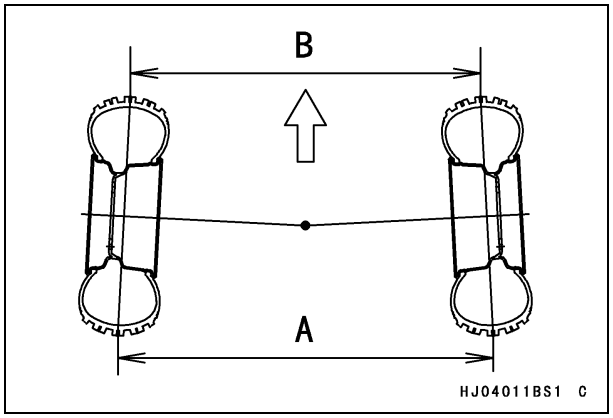
- The headlight beams can be adjusted vertically.
- Turn the adjusting screw on each headlight rim in or out to adjust the headlight vertically.

A. Adjusting Screw
B. Headlight Body

Front Wheel Alignment

Toe-in is the amount that the front wheels are closer together in front than at the rear at the axle height. When there is toe-in, the distance **A** (Rear) is greater than **B** (Front) as shown. If toe-in is incorrect, the front wheels will be dragged along the ground, scuffing and wearing the tread knobs. Caster and camber are built-in and require no adjustment.

A (Rear) – **B** (Front) = Amount of Toe-in (Distance **A** and **B** are measured at axle height with the vehicle sitting on the ground, or at 1G.)

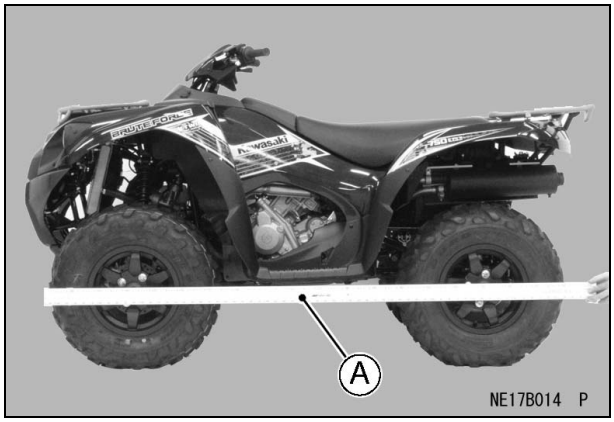


Steering Centering Inspection

- Test ride the vehicle. If the handlebar is straight when the vehicle is traveling in a straight line, go on to the Toe-in Inspection procedure. Otherwise, go on to the Steering Centering Adjustment procedure.

Steering Centering Adjustment

- Hold a straightedge against the rear wheel rim on one side at axle height.

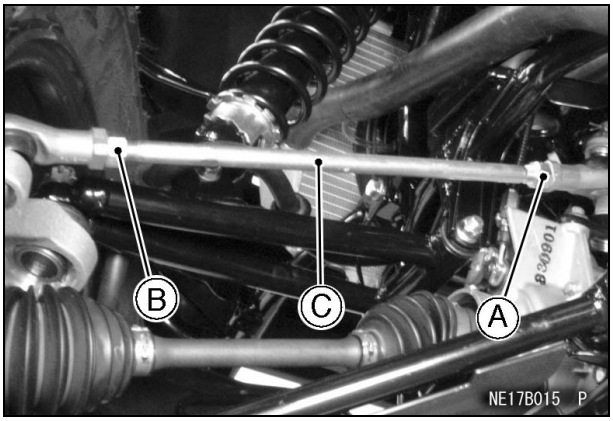


A. Straightedge

- With the handlebar straight ahead, loosen the locknuts [A] [B] and turn the tie-rod until the front wheel on that side is parallel to the straightedge.

NOTE

○ *The locknut [A] on the tie-rod has left-hand threads. Turn the wrench clockwise for loosening.*



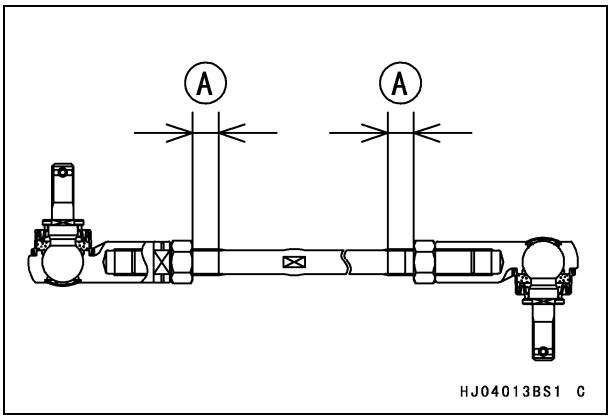
A. Locknut (Left-hand Threads)

B. Locknut (Wheel Side)

C. Tie-rod

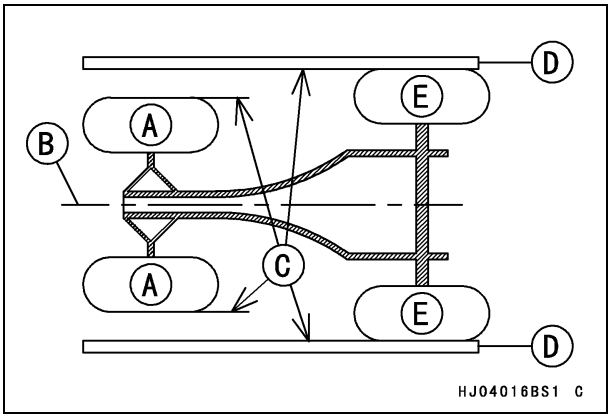
NOTICE

Adjust the tie-rod so that the visible thread length is even on both ends of the tie-rod, or the threads could be damaged.



A. Visible Thread Length

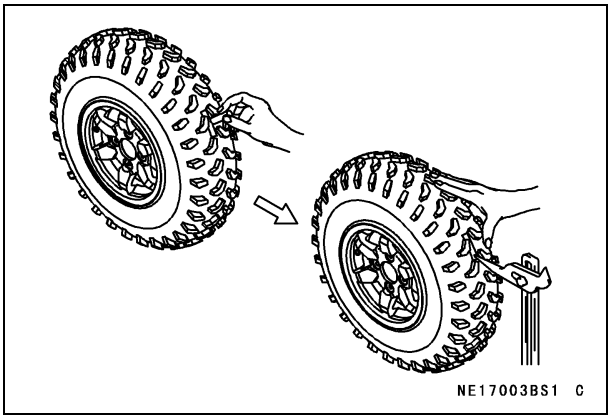
- Repeat the straightedge procedure on the other side of the vehicle. Now the front wheels are parallel to each other and to the center line of the vehicle.
- Go on to the Toe-in Inspection procedure.



A. Front Wheels
B. Vehicle Center Line
C. Parallel each other.
D. Straightedges
E. Rear Wheels

Toe-in Inspection

- Apply a heavy coat of chalk or a paint line near the center of the front tires.
- Using a needle nose scriber, make a thin mark near the center of the chalk coating while turning the wheel.



- With the front wheels on the ground, set the handlebar straight ahead.
- At the level of the axle height, measure the distance between the scribed or painted lines for both front and rear of the front tires.

- Subtract the measurement of the front from the measurement of the rear to get the toe-in. If the toe-in is not in the specified range, go on to the Toe-in Adjustment procedure.

Toe-in of Front Wheels

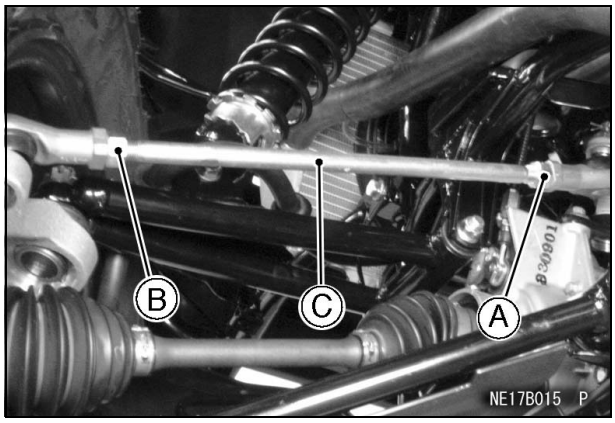
Standard: –5 ~ 15 mm (–0.20 ~ 0.59 in.) at 1G

Toe-in Adjustment

- Loosen the locknuts [A] [B] and turn the tie -rod the same number of turns on both sides to achieve the specified toe-in.

NOTE

○*The locknut [A] on the tie-rod has left-hand threads. Turn the locknut clockwise for loosening.*



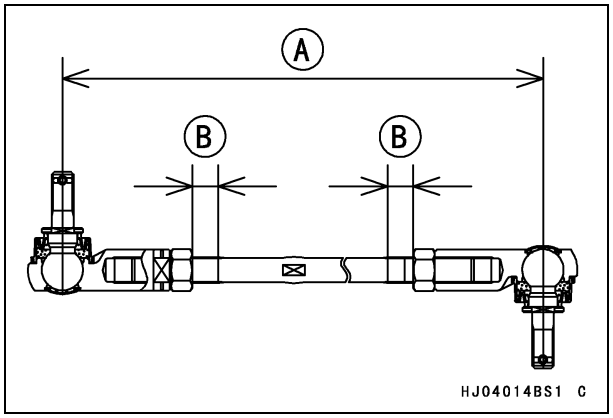
A. Locknut (Left-hand Threads)
B. Locknut (Wheel Side)
C. Tie-rod

NOTE

○*The toe-in will be near the specified value, if the tie-rod length [A] is 388.5 mm (15.30 in.) on each tie-rod.*

NOTICE

Adjust the tie-rod length so that the visible thread length is even on both ends of the tie-rod. Uneven thread length could cause tie-rod damage.



A. Visible Thread Length

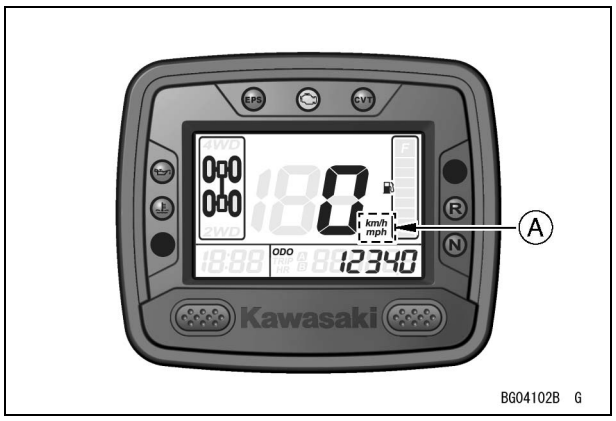
- Check the toe-in.
- Tighten the tie-rod locknuts to the specified torque.

  Torque : 36 N·m (3.7 kgf·m, 27 ft·lb)
- Test ride the vehicle.

Multifunction Meter

Check the km/h·mph Display in the Multifunction Meter

The km/h·mph display can alternate between metric and English modes (km/h and mph) in the meter unit. Make sure that km/h or mph is correctly displayed according to local regulations before riding. If the measurement unit displayed in the multifunction meter is not correct, switch it to the correct unit as follows.



A. km/h·mph Display

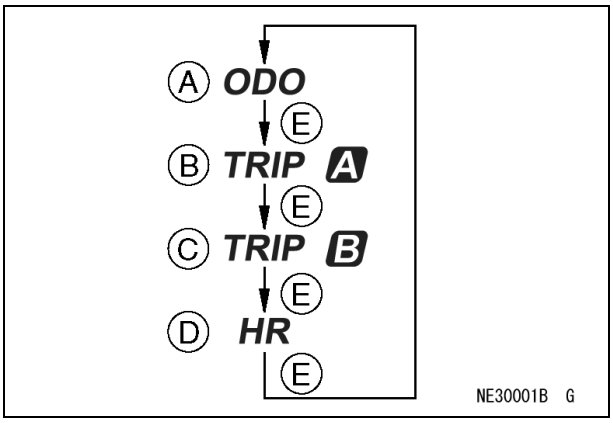
- Turn the ignition key to “ON”.
- Check to see if the ODO is displayed in the multifunction meter.

NOTE

○ *The km/h or mph display can be switched over only when the meter is in the ODO display mode.*

A. ODO Display

- If the ODO is not displayed, switch the meter display mode by pushing the left button several times to shift the display mode to the ODO.



A. ODO Display
B. TRIP A Display
C. TRIP B Display
D. HR Display
E. Push Left Button.

A. Left Button
B. Right Button

- The km/h·mph display is shifted by pushing the Right button for less than two seconds while pushing in the Left button during the odometer is displayed.
- Turn the ignition key to “OFF”.

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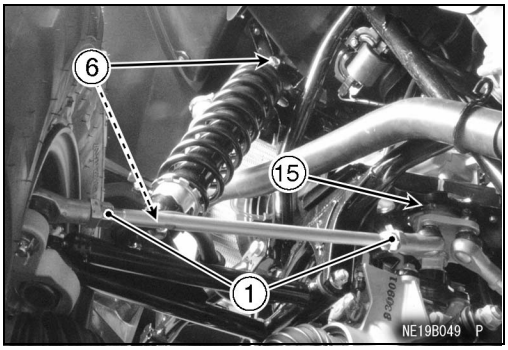
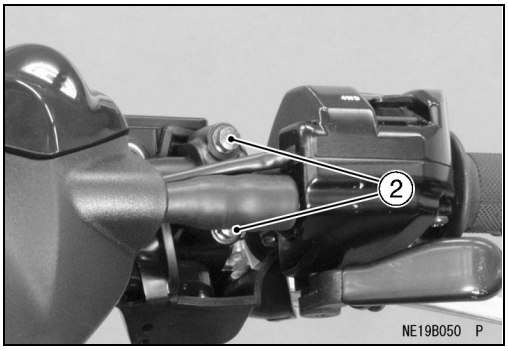
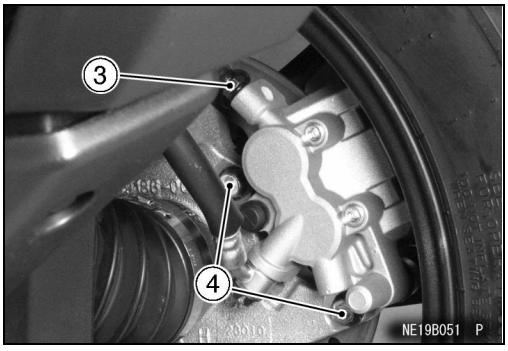
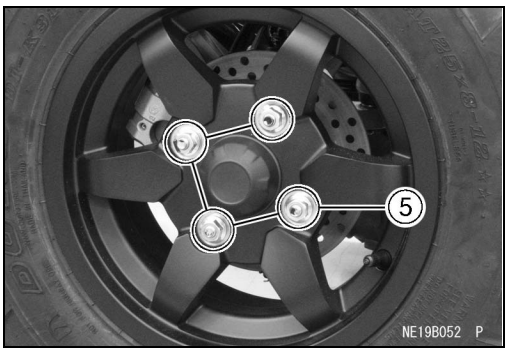
Fastener Check

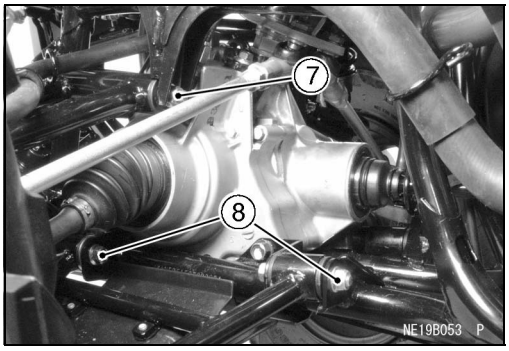
- The torque values listed are for assembly and preparation items only, see the appropriate Service Manual for a more comprehensive list. Check tightness of all fasteners that are in the table before retail delivery. Also check to see that each cotter pin or circlip is in place.

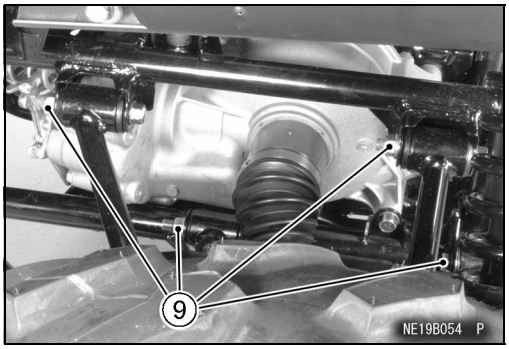


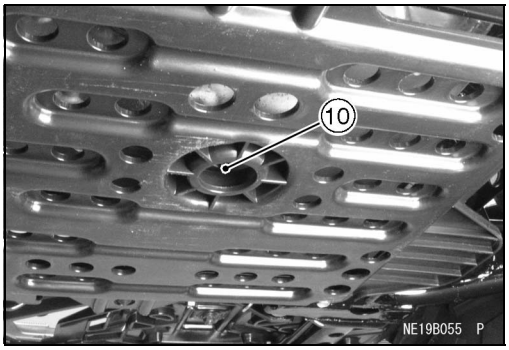


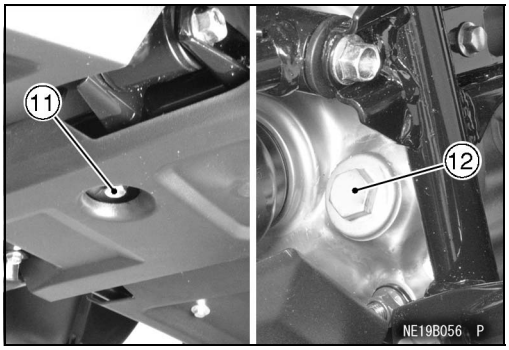


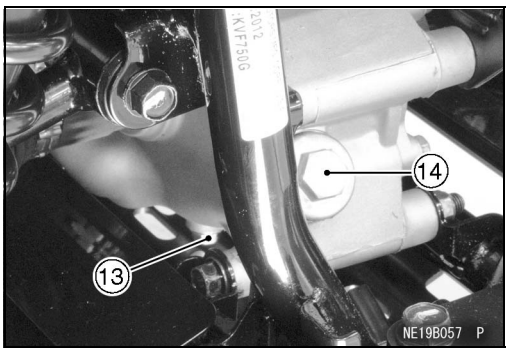


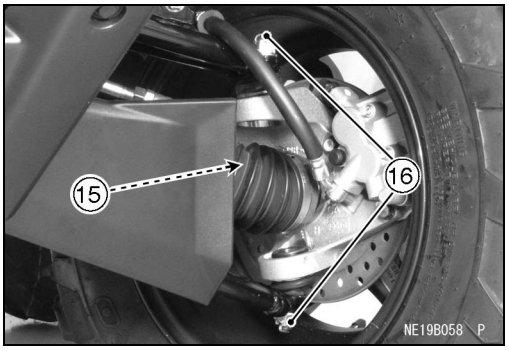


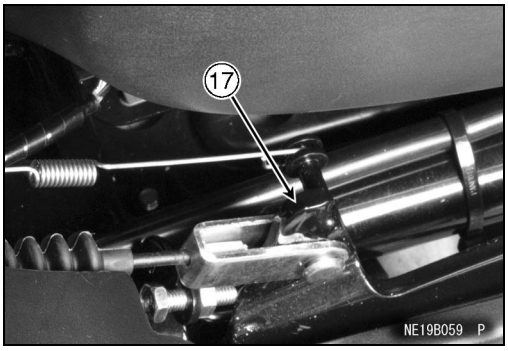












No.	Fastener	Torque			Remarks
		N·m	kgf·m	ft·lb	
Frame/Steering					
1	Tie-rod locknuts (Left and Right)	36	3.7	27	
Brake					
2	Front master cylinder clamp bolts	8.8	0.90	78 in·lb	S1
3	Front brake bleed valves (Left and Right)	7.8	0.80	69 in·lb	
4	Front brake caliper mounting bolts (Left and Right)	25	2.5	18	
Wheel					
5	Front and rear wheel nuts (First Torque)	15	1.5	11	S2
	Front and rear wheel nuts (Final Torque)	76	7.8	56	S2
Suspension					
6	Front and rear shock absorber mounting nuts (Left and Right)	34	3.5	25	
7	Front upper suspension arm pivot nuts (Left and Right)	59	6.0	44	
8	Front lower suspension arm pivot nuts (Left and Right)	47	4.8	35	
9	Rear upper and lower suspension arm pivot nuts (Left and Right)	47	4.8	35	
Engine					
10	Engine oil drain plug	20	2.0	15	
11	Front final gear case oil drain plug	15	1.5	11	
12	Front final gear case oil filler cap	29	3.0	22	
13	Rear final gear case oil drain plug	15	1.5	11	
14	Rear final gear case oil filler cap	29	3.0	22	
Cotter pin or Circlip					
15	Tie-rod end nut cotter pins (Left and Right)	–	–	–	
16	Steering knuckle joint nut cotter pins (Left and Right)	–	–	–	
17	Rear brake cable cotter pin	–	–	–	

S1: Tighten the upper clamp bolt first, and then the lower clamp bolt.
S2: Tighten the nuts in a criss-cross pattern to the first and final specified torques.

Standard Torque Table

This table relating tightening torque to thread diameter, lists the basic torque for bolts and nuts. Use this table for only the bolts and nuts which do not require a specific torque value. All of the values are for use with dry solvent -cleaned threads.

General Fasteners:

Threads	Torque		
dia. mm	N·m	kgf·m	ft·lb
5	3.4~4.9	0.35~0.50	30~43 in·lb
6	5.9~7.8	0.60~0.80	52~69 in·lb
8	14~19	1.4~1.9	10.0~13.5
10	25~34	2.6~3.5	19.0~25
12	44~61	4.5~6.2	33~45
14	73~98	7.4~10.0	54~72
16	115~155	11.5~16.0	83~115
18	165~225	17.0~23.0	125~165
20	225~325	23~33	165~240

Test Ride

● Complete the test ride checklist.

Control Cables: The control cables must work without binding in any steering position.

Steering: Action is free from lock-to-lock.

Suspension: Check operation front and rear.

Engine: Electric starter works properly and engine starts promptly. Good throttle response and return.

Belt Drive Torque Converter: Smooth operation.

Differential: Smooth operation.

Forward-Reverse Shift: Smooth operation.

Hi-Low Shift: Smooth operation.

2WD-4WD Shift: Smooth operation.

Brakes: Adequate, smooth stopping power. Do not drag.

Multifunction Meter:

Speedometer - check operation.

Fuel Level Gauge - check operation.

Clock - check operation.

Odo/Trip/Hour Meters - check operation.

Electrical System:

Headlight - check operation.

Taillight - check operation.

Brake Light - check operation.

Instrument Lights and Indicator Lights - check operation.

European and UK Models only:

Reverse Light - check operation.

Other than US and Canadian Models:

Horn - check operation.

Engine Stop Switch Works:

No Unusual Noises:

No Fuel, Oil, Brake Fluid, or Coolant Leaks:

PREPARATION COMPLETE.

A&P Check List

● Complete the A&P Check List.

MODEL APPLICATION

Year	Model	Name
2012	KVF750GCF	BRUTE FORCE 750 4×4i EPS KVF750 4×4 EPS
2012	KVF750HCF	BRUTE FORCE 750 4×4i EPS
2012	KVF750JCF	BRUTE FORCE 750 4×4i EPS
2012	KVF750LCF	BRUTE FORCE 750 4×4i KVF750 4×4

Kawasaki
KAWASAKI HEAVY INDUSTRIES, LTD.
Motorcycle & Engine Company
Part No. 99931-1524-02